North Carolina 2020 Draft 303(d) List Public Comment

NC Division of Water Resources Responsiveness Summary

Submitted to EPA June 3, 2021

Comments received from:

These comments with NC Division of Water Resources (DWR) responses in italics are provided below.

Charlotte-Mecklenburg Storm Water Services

The Storm Water Services Division of the City of Charlotte (Charlotte-Mecklenburg Storm Water Services or CMSWS) appreciates the opportunity to provide input on the N.C. Division of Water Resources (NCDWR) 2020 Draft 303(d) List and Integrated Report. After reviewing these documents and the data that accompanied the listing decisions, we identified a few inconsistencies and potential errors that we would like to be addressed before the listing decisions are finalized.

In 2005, the State approved a turbidity TMDL which covered Long Creek, McAlpine Creek, Sugar Creek, Little Sugar Creek, Irwin Creek and a couple of water bodies outside of Charlotte's jurisdiction. Of these named water bodies, the Integrated Report does not identify Irwin Creek (11-137-1) or Sugar Creek (11-137c) as having approved turbidity TMDLs but does identify Little Sugar Creek (11-137-8b, 11-137c) and McAlpine Creek (11-137-9b) as having approved turbidity TMDLs. Long Creek (11-120-(2.5)) is identified as having an approved TMDL for TSS but not for turbidity. The application of the "Approved TMDL" and "Category 4t" classification to water bodies named in the 2005 turbidity TMDL appears to be inconsistent.

For water bodies with either a fecal coliform or turbidity TMDL (or both), it is our understanding that benthic and fish classifications should be listed as Category 4s on the Integrated Report rather than being listed on 303(d) and as Category 5 on the Integrated Report. Little Sugar Creek (11-137-8a, 11-137-8b, 11-137-8c) is listed as Category 4s for benthos and fish for this reason, but reaches along McAlpine Creek (and McMullen which flows to McAlpine), Sugar Creek, and Irwin Creek are still listed on 303(d) and as Category 5 for fish and benthos despite having approved TMDLs.

Mallard Creek (13-17-5b) is listed on the 303(d) list as impaired for total copper based on an assessment done in 2008. The more recent dissolved copper data that we submitted for consideration in the 2020 303(d) listing decisions shows Mallard Creek as meeting criteria with statistical confidence. The Integrated Report also states that both Mallard Creek reaches (13-17-5a, 13-17-5b) are "Meeting Criteria" for the fish community, whereas the data we submitted shows a "Fair, Poor or Severe Bioclassification" for both reaches.

Thank you for taking these comments into consideration before finalizing the 2020 303(d) list and Integrated Report. If you have any questions, please contact me at 704-432-5572 or at jahunt@charlottenc.gov to discuss.

DWR Response: *Thank you for this comment. These comments are Assessment Unit (AU) specific and were addressed directly with City of Charlotte staff.*

City of Durham Public Works Department

Comments on Listing Methodology:

Assessing Numeric Criteria and Delisting Waters (page 4)

The statistical test for delisting waters should be removed from the Methodology. This was noted in comments from the Public Works Department in response to the 2018 303(d) List. The application of this test is in conflict with the approach used by the state since the first 303(d) List and through 2016; it should not be summarily approved by the Environmental Management Commission. The Methodology now requires both a statistical test to add unlisted Assessment Units (AUs) to the 303(d) list and an additional statistical test to remove listed AUs from the 303(d) list. Prior to 2018, a statistical test was only used on to determine if an AU should be added to the 303(d) list. Since 2018, a second statistical test was added to delist an AU from the 303(d) list. This two-test approach that is currently used is problematic for several reasons.

First, from a practical standpoint, the two-test system leads to situations where the assessment and delisting statistical tests provide conflicting results. One test may indicate a healthy water body and the second test may indicate a that a water quality issue is present. The Methodology document provides no means to resolve this situation like a plan for additional sampling, communication with stakeholders and residents in the AU, or other action. Furthermore, these listings that have conflicting statistical test results are not identified in the IntegratedReport or 303(d) list. This may cause undue concern and investment of resources for a situation where a water quality issue may not even be present but an AU is included on the 303(d) list.

A second issue with this shift in methodology since 2018 is that it is counter to the precedent of the approach used on 303(d) lists from 1998-2016. Built in to this shift from previous methods is a change in assumptions for the 303(d) listing approach. The approach previously used was based on an assumption that all AUs were meeting their designated uses. In applying the statistical test, this is referred to as the null hypothesis. The current approach now uses two tests with competing assumptions or null hypotheses. Taken together the Methodology now means that it is easier for an AU to be added to the 303(d) list and more difficult to be delisted. This includes situations where listings based on older data and parameters that do not have criteria any more (e.g., total copper, total zinc, etc.) remain on the 303(d) list until more data are collected. Again, in these situations, an actual on-the-ground water quality issue may not even exist for an AU that is listed on the 303(d) list, making the 303(d) list inaccurate.

A third issue with the delisting methodology, that is new in the 2020 Methodology, is a statistical test for reviewing new data collected on non-toxic parameters, but that is not applied to toxic parameters. This divergence in the delisting methodology between toxic and non-toxic parameters discounts stakeholders' effortsto reduce discharges of toxics substances. The new delisting methods means that even if action steps were taken to successfully reduce the discharge of toxic substances to an AU, the AU may still remain on the 303(d) list. This could occur even if new data showed that concentrations of toxic substances did indeed decrease below the criterion. In such a case, the AU may still exist on the 303(d) list until an arbitrary 'enough time has passed' for new data to be collected and that they outweigh the old data within the entire dataset. This new delisting methodology excludes analyzing only new data for toxic parameters, which, is inconsistent with how non-toxic parameters are analyzed. This means that delisting an AU for a toxic substance is more dependent on the amount of samples that may

or may not have been collected in the past and does not take stakeholders' management actions into account.

DWR Response: *This is not a waterbody specific 303(d) comment, but is a comment on the assessment methodology. The comment contains several misunderstandings of the assessment process and are addressed here. DWR would refer the commenter to the 2018 Response to Comments in which many of these concerns were previously addressed. The NC Environmental Management Commission (EMC) approved the current method for delisting to address EPA concerns that delistings were occurring with very little confidence that the waterbody was meeting criteria. Previous EPA comments were concerned with the lack of a documented delisting process and that confidence in Meeting Criteria was not considered for delisting.*

The "two test system" is not a two test system as described by the commenter. The delisting test is only applied to currently listed waters and is independent of the test for listing. No conflicting results occur. The parameter/AU is not "listed" until EPA final approval therefore the delisting test is not applied until the next assessment cycle if the excursion rate indicates confidence that the new assessment is meeting criteria. In order to increase confidence to delist a water, a 70% confidence approach was used for most datasets.

Total metals have been marked as legacy assessments in category 5. This will be reassessed using the new standards and assessment methods. If criteria are exceeded these will be new listings and the previous total metals assessment will be delisted. If dissolved metals assessments are meeting criteria then the previous total metals assessment will be delisted indicating that the waterbody is meeting criteria.

Toxic and non-toxic parameters are assessed using the same criteria. If this comment is in reference to legacy total metals assessments that is addressed above.

Arbitrary and Unclear Nature of Assessing Numeric Criteria and Delisting Waters (pages 3,4, and 10)
The statistical testing for 'assessing numeric criteria' and 'delisting waters' has practical and logic issues as noted above; the methodology for assessing and delisting waters are also unclear and appear to be arbitrary in nature.Supporting information is not provided for decision points in the complicated assessment and delisting system. For example, statistical confidence intervals used in the methodology are inconsistent and unsupported. Typically, 5% and 95% confidence intervals are used for determining statistical significance in environmental data. Statistical confidence levels of 10% and 90%, which are used in the assessment/delisting criteria, are less common but are used in environmental data analysis. The 40% confidence level used in this methodology is unprecedented and arbitrary. Next, decision criteria for the 'number of excursions in new data' in the AppendixA Flowchart are inconsistent and unsupported in the Methodology documentation. Within the Appendix A Flowchart, >1, >2, and >3 excursions in new data are all used as criteria at different points in the workflow with no justification. This approach is both inconsistent and seemingly arbitrary. Third, the Appendix A Flowchart shows ">10% Above Evaluation Level" as the starting point for the assessment of an AU. This starting point for the assessment is in conflict with text in the Delisting Waters section that states, "NC will review the final 2018 303(d) List as the starting point for the development of the 2020 303(d) List." If the 2018 303(d) List were truly the starting point for development of the 2020 303(d) List, it should be the first box in the Appendix A Flowcharts. Inconsistencies between the Methodology text and flowchart make the application of the assessment and delisting methodology seem haphazard in nature.

In addition to the arbitrary nature of some aspects in the Methodology, the criteria for assessing and delisting AUs are unclear and the Appendix A Flowchart and is inconsistent with the text. For example, the Appendix A Flowchart presents two workflows that start from two different percentage values, 10% and 10.01%. This is despite the fact that these boxes seemingly representing the same starting positon for an assessment. The flowchart does not specifically state 'delisted' as an outcome of an assessment despite this being a possible outcome as described in the Delisting Waters section of the methodology. Next, confusing language between the Delisting Criteria section and the Appendix A Flowchart make cross-referencing between the two very challenging. For example, text in Delisting Waters states, "…will be delisted if there are less than 2 excursions ofthe criterion in newer data…," whereas, the box in lower track of the Appendix A Flowcharts for this decision states, ">1 excursions in new data years." Comparing 'less than 2' with 'greater than 1' makes an already complex workflow even more challenging to understand.

Taken together, the arbitrary and unclear nature of the Methodology for generating the 2020 303(d) List makes it appear that the list could be generated in an inconsistent manner. Listings on the 2020 303(d) List could may be based on tenuous statistical tests or unsupported criteria in the analysis of new data. This approach could result in situations where stakeholders invest resources to verify impairments that may not exist in the field, or that resources are invested to try to fix a water quality problem that does not exist. It could also create the impression to the state's residents that an issue exists when it does not, causing undue concern.

DWR Response: *This is not a waterbody specific 303(d) comment, but is a comment on the assessment methodology. DWR would refer the commenter to the 2018 Response to Comments in which many of these misunderstandings were previously addressed. The justification for the decision points were fully vetted during the 2018 development process. The assessment method is not an environmental data analysis. The confidence criteria were developed to address EPA concerns for delisting with very little statistical confidence that water quality standards were Meeting Criteria while listing required a high degree of confidence that water quality standards were Exceeding Criteria. The actual numbers of 40% and 70% were developed based on a rigorous review of state ambient monitoring data and vetted through EPA and the EMC during the 2018 methodology process.*

Regarding the flowcharts, they are provided to describe the entire process, not just the delisting pathways. Text is provided in the methodology to confirm the delisting process.

The 2020 assessment approach basically adds up to a weight of confidence (statistical and other) approach to both listing and delisting that addresses concerns of both those who believe NC overlist and those who believe NC underlist and is still able to be implemented by staff and is acceptable to EPA. The commenter did not provide an alternative solution for consideration that provides a pathway to balancing listing and delisting decisions, no changes to the numerical method for the 2022 assessment are proposed by DWR.

Comments related to Durham streams:

Third Fork Creek - Dissolved Oxygen - Third Fork Creek [16-41-1-12-(1), From source to a point 2.0 miles upstream of N.C. Hwy. 54] should not by listed for dissolved oxygen on the 2020 303(d) List. Dissolved oxygen at Third Fork Creek [16-41-1-12-(1)] appears on both the Draft 2020 303(d) Delistings document

(from category 5 to 3a) and the Draft 2020 303(d) List (listed as category 5). Comments on the 2020 Draft 303(d) List note that the listing is based on 'Legacy RAMS Assessments' while the 2020 Delistings document notes that 'More Recent/New Data' are available. Monthly dissolved oxygen measurements, collected by the Public Works Department at Woodcroft Parkway, supports delisting this AU. Since the 2018 303(d) List was published on 6/3/2019, 31 monthly measurements of dissolved oxygen, with an average concentration of 7.9 mg/L, have been collected at the Woodcroft Parkway site. The single measurement that was collected below 4 mg/L was collected on 10/8/2019 with a concentration of 1.3 mg/L. This measurement was collected on a warm-weather sampling day that followed a very dry September with only one small rainfall event (0.64 inches) recorded in the 38 days prior to sampling. The single low dissolved oxygen was likely the result of low-flow conditions in combination with high water temperatures during the late summer. An overwhelming majority (97%) of the data discussed above supports delisting this Third Fork Creek AU. Dissolved oxygen data are available upon request.

DWR Response: *Third Fork Creek now has an ambient monitoring station and using the new assessment method it will be delisted for DO in the final 2020 303(d) list the Division will submit to EPA for approval. The 303(d) assessment was left in place during public review while confirming station location compared to the legacy Random Ambient Monitoring Station (RAMS). Regarding third party data submittal, as noted in DWR's Response to Comments on the 2018 303(d) List: DWR continues to work towards implementation of the new dissolved metals standards and welcomes data submittal from the City as there is already an approved QAPP. DWR does not actively harvest water quality data regardless of data quality. As DWR has pointed out to the commenter on previous lists, data used in the assessment must go through the public review process. For DWR to use data in the assessment, it must be submitted using the process described on our website: https://deq.nc.gov/about/divisions/water-resources/planning/modeling-assessment/water-quality-data-assessment.*

<u>New Hope Creek – Turbidity</u> - A listing for turbidity on New Hope Creek [16-41-1-(11.5)b, from Durham Co SR 2220 (Old Chapel Hill Rd) to I-40]was new to the 303(d) List. The Public Works Department monitors turbidity at Old Chapel Hill Road (SR2220), collecting monthly samples in both 2017 and 2019. The average and median turbidity values from the measurements taken during these two years was 32 NTUs and 13 NTUs, respectively. A 6/20/2017 sample that measured 129 NTU was collected on a day with 1.32" of rainfall. A sample that measured 54 NTUs was collected one day after 0.8" of rainfall occurred on 2/18/2019. A 7/23/2019 sample that measured 312 NTU was collected on a day with 0.54" of rainfall. Consequently, 21 of the 24 measurements (88%) collected by the Public Works Department are not consistent with the listing of this stream on the 2020 303(d) List. Turbidity data are available upon request.

DWR Response: *This AU has had periodic turbidity listings. See above regarding data submittal.*

<u>Northeast Creek - Total Copper</u> - Northeast Creek has listings for copper that are based on legacy total metals assessments. This includes AUs 16- 41-1-17-(0.7)a (From N.C. Hwy. 55 to Durham Triangle WWTP) and 16-41-1-17-(0.7)b2 (From Kit Creek to a point 0.5 mile downstream of Panther Creek) that are listed for total copper. Both of these AUs are downstream of an industrial facility that processes copper. From the EPA TRI 2019 dataset, this facility reported air emissions of copper compounds of 10,104 pounds in 2019. This is down from 12,861 pounds in 2016 and 13,851 pounds in 2014. The same facility reported 46 pounds of copper leaving the site in surface water in 2019, 65 pounds in 2016 and 136 pounds in 2014. The Public Works Department measures dissolved copper and hardness at three locations in the

Northeast Creek watershed (Sedwick Road, NC Highway 54, and Meridian Parkway). Based on 2020 sampling data, the sample-specific Continuous Criterion Chronic (CCC) for copper was exceeded at all threelocations. Listing Methodology for the 2020 303(d) List states that impairments for total metals will be removed only when dissolved metals data are available.

DWR Response: *See above regarding data submittal.*

Northeast Creek - Total Zinc - Northeast Creek AUs that are listed for total zinc on the 2020 303(d) List include 16-41-1-17-(0.7)b1 (from the Durham Triangle WWTP to Kit Creek in Wake County) and 16-41-1-17-(0.7)b2 (From Kit Creek to a point 0.5 miledownstream of Panther Creek). Durham monitors both dissolved zinc and hardness at three locations upstream of these assessment units, at Meridian Parkway, NC Highway 54, and Sedwick Road. A site-specific and sample- specific CCC is determined for each monitoring date. For the period from January 2014 to December 2020, the CCC was not violated in 94 samples. Therefore, Durham data is inconsistent with the evaluation of the AUs fromthe Durham WWTP to Kit Creek and from Kit Creek to 0.5 miles downstream of Panther Creek.

DWR Response: *See above regarding data submittal.*

Third Fork Creek - Total Copper - One AU of Third Fork Creek [16-41-1-12-(2), From a point 2.0 miles upstream of N.C. Hwy. 54 to New Hope Creek] is listed for total copper on the 303(d) list. Durham monitors both dissolved copper and hardness at onelocation on this AU (at Woodcroft Parkway) and two locations (Dover Road and Rugby Road) on tributaries draining directly to this AU. A site-specific and sample-specific CCC is determined for each monitoring date. For the period from January 2018 to January 2021, the CCC was not violated in 27 of 30 samples (90%). The mediandissolved copper concentration was 3.1 µg/L while the median CCC was more than double at 6.3 µg/L. Therefore, Durham data is generally inconsistent with the listing of this AU for total copper.

DWR Response: *See above regarding data submittal.*

Northeast Creek – Turbidity - Turbidity should be listed in category 4, not category 5, for Northeast Creek upstream of Sedwick Road. One AU of Northeast Creek appears on the 2020 303(d) List for turbidity, 16-41-17-(0.7)a, from US Highway 55 to Durham Triangle WWTP. Detailed comments on this listing were provided by the Public Works Departmentduring the public comment period for the 2018 303(d) List.

DWR Response: *As noted in DWR's Response to Comments on the 2018 303(d) List: Regarding turbidity, on February 18, 2014, the City of Durham submitted a request to DWR to reassign the dissolved oxygen impairment to category 4c due to hydrologic modification, but did not include turbidity in that request. The request to recategorize dissolved oxygen was approved. For turbidity, the letter from the City of Durham simply stated, "City hopes that this information will inform any future regulatory decision-making (e.g., TMDL development for turbidity)."*

Little Lick Creek – Turbidity - Both assessment units of Little Lick Creek [27-9-(0.5) and 27-9-(2)] are included on the 2020 303(d) List for turbidity. The Public Works Department commented on these AUs in response to the 2018 303(d) List. Briefly,these comments noted the NC Department of Transportation

East End Connector project that began in 2014- 2015. This project is still ongoing and has involved land disturbance, removal of trees and buildings, and roadway construction near the headwaters of Little Lick Creek. Turbidity data collected by the Public Works Department since the publishing of the 2018 303(d) List has indicated average and median turbidity values 41NTUs and 29 NTUs, respectively.

DWR Response: *See above regarding data submittal.*

Ellerbe Creek, Lick Creek, Little Creek, and New Hope Creek - Benthos Criteria

Several AUs shown in the table below are located in Durham and are listed for 'Fair, Poor or Severe Bioclassification' in the 2020 303(d) List. These AUs, however, are located in the Triassic Basic and thus, shouldnot receive a bioclassification since Triassic Basin Criteria for benthic macroinvertebrates do not exist.

Furthermore, two sites, Ellerbe Creek [27-5-(2)] and Lick Creek [27-11-(1.5)] are directly upstream of Falls Lake. Benthic macroinvertebrate communities in these two AUs are likely influenced by elevated hydrology from the lake. The influence of elevated hydrology on fishes was detailed by comments from the Public Works Department on the 2018 303(d) listing for Ellerbe Creek-fish. Those comments noted the capturing of lentic- adapted White Bass and Black Crappie at Glenn Road on the Ellerbe Creek [27-5-(2)] AU. Since Triassic Criteria do not exist, the six AUs listed below should be removed from the 2020 303(d) List. The Public Works Department supports the development of Triassic Basin Criteria and criteria for Triassic Basins influenced by lake hydrology.

Triassic basin AUs in Durham listed on the 2020 303(d) List for benthos with a 'Fair, Poor or Severe Bioclassification'.

AU Name	AU Number	Description
New Hope Creek	16-41-1-(11.5)a	New Hope Creek From a point 0.3 mile upstream of Durham Co SR 2220
New Hope Creek	16-41-1-(11.5)b	From SR 2220 to I 40
Little Creek	16-41-1-15-(0.5)	From source to a point 0.7 mile downstream of Durham Co SR 1110
Lick Creek	27-11-(0.5)	From source to Wake County SR 1809
Lick Creek	27-11-(1.5)*	From Wake County SR 1809 to Falls Lake, Neuse River
Ellerbe Creek	27-5-(2)*	From a point 0.2 mile upstream of Durham County SR 1636 to Falls Lake, Neuse River

* This AUs is likely influenced by lake effects from the downstream Falls Lake.

DWR Response: *We will share this comment with the DWR Biological Assessment Branch for evaluation of the representativeness of monitoring locations.*

Lower Neuse Basin Association (LNBA) and the Neuse River Compliance Association (NRCA)

1. For water quality impairment decisions, DWR has continued to alter Assessment Units (AU) based on the observed concentration data for individual parameters on each assessment period. Altering Assessment Units based on the changing concentrations of observed data is particularly important in Reservoirs and Estuaries. Concentration data is highly variable even in pristine waterbodies. When DWR observes differences in the concentration standards attainment at particular stations within an AU, the AU is subdivided where one parameter 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. We make particular note that the 2020 assessment reports for the lower Neuse estuary did not include extensive data collected by NCSU and the UNC IMS Modeling and Monitoring program (ModMon). This is very disturbing. The result is a dramatic increase in the number of AU's with only one sampling location. Impairment decisions made based on limited sampling sites and limited data greatly increase the uncertainty of the assessment decision.

DWR Response: *The assessment unit delineation process that has been in place since 2004 is also now included in the NC 303(d) Listing and Delisting methodology. In addition, DWR now has the capacity to recombine assessment units as needed when there are consistent results indicating areas of similar water quality. The establishment and potential for splitting of assessment units (AUs) was discussed in the 2018 response to comments. It must be stressed that the number of assessments units has no impact on attainment of a not-to-exceed standard that must be met at all places.*

Over 50 percent of AUs in the state are based on one station. In general , increases in 303(d) listings is mostly related to increased monitoring stations where parameters are exceeding criteria, rather than due to the splitting of assessment units. Previous numbers of 303(d) assessments are as follows 2008 N=1323, 2010 N= 1301, 2012 N= 1255, 2014 N= 1242, 2016 N= 1296, 2018 N=1301, 2020 N= 1366. By far the majority of the 2020 increase in listings is due to mapping issues between DWR and Division of Marine Fisheries (DMF) on shellfish harvesting waters. As this mapping issue is resolved, the number of listings will likely go back down to around 1300 or so.

Regarding third party data, data submittal is the responsibility of the data collector not DWR staff. DWR staff reached out to previous data submitters as a courtesy in 2020, but only the Charlotte Mecklenburg Stormwater provided data. DWR suspects that the lack of data submittal was due to COVID, but expects third parties to submit data for inclusion in the 2022 assessment.

2. Throughout our review of the detailed Integrated Report Fact Sheets impairments for Total Nitrogen were frequently observed and listed in Category 4t - . With the exception of water supply waters that have Nitrogen standards of 10mg/L, NC has no numerical water quality criteria (standards) for nitrogen. We made similar comments on the 2018 versionsof the assessment documents. Any reference to exceeding criteria for nitrogen should be removed. The Neuse estuary TMDL was constructed and approved by EPA to address standards non-attainment of chlorophyll-a. The water quality target for this TMDL is chlorophyll-a as explicitly identified in

the TMDL. While the Neuse strategies seek to manage chlorophyll-a non-attainment of the standard with nitrogen controls, nitrogen is NOT a water quality standard and thus the Integrated Report is inappropriately suggesting that a standard for nitrogen has been exceeded. This error is biased and suggestive of the need for a nitrogen numerical water quality standard it is not appropriate for listing waters as impaired. Even within the 2020 Draft IR, total nitrogen "attainment" is evaluated inconsistently as described below. Total Nitrogen should be removed from the IR.

Total Nitrogen Assessment
Two Assessment Units are listed in Category 1t Meeting Criteria
Approved TMDL27-(96)b1b and 27-(96)b1c

One Assessment Unit is listed in Category 4t and yet Meeting Criteria
27-(96)b2
Eight Assessment Units for total nitrogen are listed in Category 4t
Exceeding Criteria27-(104)a1, 27-(104)a2, 27-(104)b, 27-(118)a1
27-(118)a1a, 27-(118)a2a, 27-(118)a2b, 27-(118)f

DWR Response: *The waters in question are not on the 303(d) list, this is a comment on the 305(b) component of the Integrated Report. As DWR has explained previously in the 2018 response to comments, page 35, subcategory t is used for the TMDL parameter. In many cases this is the same as the listed parameter. When a TMDL is completed to address a Category 5 listing for chlorophyll-a, the chlorophyll-a assessment moves to 4i (indicator) and the TMDL parameter moves to 4t. In this case, total nitrogen (TN) is the 4t parameter.*

This tracking mechanism serves two purposes. First, it informs the public that, even though the parameter originally listed may periodically be meeting criteria, the reduction goals of the TMDL have not been met and therefore future exceedances of the originally listed parameter could still happen. Second, this mechanism serves as an administrative tool that helps DWR and EPA keep track of TMDLs and management strategies as well as implementation.

In response to this comment, DWR corrected the assessments in AU 27-(96)b1b and c to have the total nitrogen assessment back in 4t as current information does not indicate a 30 percent reduction in TN has been achieved as called for in the TMDL/rules. AU 27-(96)b2 is not meeting criteria for chlorophyll a (Data Inconclusive is not Meeting Criteria). The other eight AUs have TN correctly assessed in Category 4t.

3. Legacy "total metals" issues are complex and have demonstrated that the new water quality standards adopted based on "dissolved metals" most often result in delisting legacy "total metals" impairment decisions. Thus, it is understandable that, there is little confidence afforded to the suggestion that "total metals" assessments indicate impairments of aquatic life uses. That said, 303(d) methods approved by the EMC indicate that Category 5 impairment decisions are not in harmony with an "inconclusive" assessment. We note that New Listings on the 303(d) list include 27-(118)a1 in the Neuse Estuary. Copper is listed in Category 5 but also with Data Inconclusive Legacy Category 5 Total Metals Assessment. We suggest that theuse of merging Category 5 with a conclusion of "inconclusive" is not consistent. We will notesimilar observations within the

Integrated Report as well. We suggest DWR prioritize their limited monitoring resources to resolve these legacy listings and to alter their decision to placethese legacy metals into category 5. Examples of these IR assessments in the lower Neuse can be found in the following AU's: 27-(96)b1b, 27-(96)b1c, 27-(104)a1, 27-(104)a2, 27-(118)a1.

DWR Response: *DWR is working to prioritize monitoring of legacy metals listing. In 2019, DWR also requested that coalitions prioritize coalition monitoring stations that are associated with an old total metals impairment for monitoring. The LNBA declined to participate and those AUs cannot be delisted until there is new data. The use of data inconclusive with Category 4 or 5 assessments is to indicate that the assessment is old and may not be valid and therefore reduces the priority of DWR/EPA to take any action on these assessments until new data are available. This may also apply to RAMS data where the stations are discontinued after two years of data collection but where DWR cannot delist the AU/parameter without new data. The concept of having the IR category, reason for rating, and assessment criteria status running independently of each other provides DWR with a great deal of flexibility and capability to prioritize the impaired waters list. This greatly decreases staff time needed to explore assessment decisions and compare them to each other.*

4. Several AU's seem to identify Chlorophyll-a as a parameter that fits into Category 4i Exceeding Criteria without referencing station numbers or summary data. It is unclear wherethis information comes from or what the actual results indicate. Are these "legacy" assessments based on data outside of the 2020 Integrated Report time period of 2014-2018? Was this assessment based on citizen complaints or some other data? Please explain. This is important to our Associations. Examples can be found in the Draft IR for AU's 27-(104)b, 27-(118)a2b.

DWR Response: *The waters in question are not on the 303(d) list, this is a comment on the 305(b) component of the Integrated Report. AU 27-(104)b and AU 27-(118)a2b do not have current stations due to the lack of third party data submittal. As a result, the previous assessment was carried forward and supported by results of stations just upstream and downstream of these AUs. DWR is hopeful that more third party data will be available for the 2022 assessment in these AUs.*

5. We have identified a suspected error in the IR for AU 27-(118)a2a. Neuse River from Adams Creek to Wiggins Point to line across Neuse River from east mouth of Orchard Creek (northside) across to east mouth of the South River (southside). This AU Includes Station J9810000. Chlorophyll-a is listed in Category 4i as Exceeding Criteria with confidence. A review of the fact sheet chlorophyll-a data summary shows:

Station #	Location	Count	#obs>40	%obs>40	%Conf
J9810000	Neuse R at CM 7 nr Oriental	41	6	15%	78%

Note that for 2017 and 2018 only two of fourteen chlorophyll-a samples exceeded criteria (14%). Potential Error - listing for chlorophyll-a should indicate category 3 data inconclusive.

DWR Response: *The waters in question are not on the 303(d) list, this is a comment on the 305(b) component of the Integrated Report. AU 27-(118)a2a - There was greater than 1 excursion in the new data years. This has been clarified to indicate that AU was Exceeding Criteria during the previous assessment.*

6. AU 27-(118)g was assessed in the 2018 IR for chlorophyll-a in Category 1 Meeting Criteria.Yet in the 2020 draft IR this AU makes no mention of Chlorophyll-a. The 2020 Fact Sheets for the IR make no mentions of chlorophyll-a data or monitoring stations for this AU. Our comment #4 may be a closely related incidence. If legacy data was used for impairment, shouldn't legacy data be used for attainment as well? This is a confusing situation can you help us to understand these decisions?

DWR Response: *The waters in question are not on the 303(d) list, this is a comment on the 305(b) component of the Integrated Report. AU 27-(118)g - This is a very small AU that is part of the named Neuse estuary at the mouth of Orchard Creek and is included in the spatial area of the TMDL. However, this AU was originally established due to prohibited shellfish harvesting areas. DWR has carried forward the 2018 assessment in response to this comment.*

7. AU 27-(104)a2 fact sheets indicate that there were two monitoring locations included.

   J8910000 NEUSE RIV AT CM 11 NR RIVERDALE and
   J8920000 location unknown

   J8920000 is unknown to us and it only had one observation. We made similar comments on the 2018 IR. Obviously this is an insignificant issue but we would appreciate an explanation.

DWR Response: *The waters in question are not on the 303(d) list, this is a comment on the 305(b) component of the Integrated Report. For, AU 27-(104)a2 - DWR Station J8920000 was and will no longer be used for assessments in this AU. It was located near Kennel Beach.*

North Carolina Farm Bureau Federation (NCFB)

The North Carolina Farm Bureau Federation (NCFB) is our state's largest general farm organization, representing the interests of farm and rural people in North Carolina. This letter is to comment on the Draft 2020 303(d) list, the 2020 Integrated Report, and the 2020 Listing and Delisting Methodology. The Public Notice requesting comments is at: https://files.nc.gov/ncdeq /Water%200uality/Planning/TMDL/303d/2020/2020-IR-Publk- Announcement.pdf The documents were accessed at: https://deq.nc.gov/about/divisions/water- resources/planning/modeling-assessment/water-quality-data-assessment/integrated-report-files

Thank you for the opportunity to provide these comments in response to the Public Notice of Availability of the DRAFT 2020 303(d) List and Integrated Report (Public Notice). Our comments will address some areas of concern that NCFB has with the Listing and Delisting Methodology and with the designation of Assessment Units and Segmentation.

Listing and Delisting Methodology: Reference Documents "2020 303(d) Listing and Delisting Methodology" and the "2020 Integrated Report Category Assignment Procedure"
The Upper Neuse River Basin Association (UNRBA) has filed extensive comments in response to the Public Notice. ln UNRBA's cover letter they state:

" ... we note that the methodology actually discourages the initiative of developing extensive Falls Lake monitoring and makes it easier for waters to be considered impaired. Furthermore, for extensively monitored assessment units, once considered impaired, the current Assessment Methodology makes it very difficult to assess attainment compliance with a standard. For example, three observations> standard within the last two years prevent attainment (see Comment #3 in the [UNRBA] attachment [below]). Assessment consistency is a critical issue. The Assessment Methodology has been changed nearly every other year (for each assessment)."

And later in the cover letter UNRBA states:
"Without consistent assessment methods it is difficult to plan and implement this [Falls Lake] strategy and impossible to measure progress in maintaining uses and water quality improvements. We implore the EMC and the State to consider these significant issues in finalizing the 2020 water quality assessment results."

In Comment #3 of their attachment UNRBA discussed Assessment Unit 27-(5.5)b2. UNRBA's comments state:
"The UNRBA notes that the Ledge Creek Arm is considered in Category 3b indicating "data inconclusive" based on one monitoring location. With 54 observations for chlorophyll-a, the 40 µg/L standard was only exceeded 4 times in five years (7%). Yet, the Assessment Unit is not attaining the water quality standard because there were more than 2 observations exceeding 40 µg/L in the last two years of the assessment period. In 2017 and 2018, there were three observations for chlorophyll-a above 40 µg/L. In previous assessments, non-compliance was determined when 10% of samples collected during the assessment period exceeded the water quality criterion. This was later changed to 10% exceedance with 90% confidence. Under the 2020 Assessment Methodology, rather than being listed as meeting water quality standards, this assessment unit is listed as "data inconclusive". Not only are the "rules of the game" changing, but the changes are confusing, frustrate management efforts, and make it more difficult to "attain" water quality standards."

NCFB concurs with the comments submitted by UNRBA regarding their concerns with the 2020 listing and delisting methodology. While UNRBA's comments reference Falls Lake, these same concerns arise with all other waterbodies across the State. NCFB feels strongly that DWR and the EMC need to consider these significant issues and make appropriate revisions before finalizing the 2020 water quality assessment results.

Assessment Units and Segmentation
The Upper Neuse River Basin Association has also provided extensive comments on the addition of assessment units and the segmentation of Falls Lake. NCFB concurs with UNRBA's comments on Falls Lake segmentation. As UNRBA states in their Comment #2 regarding the approach to segmentation in Falls Lake:
"This approach challenges watershed management efforts and result[s] in considerable confusion about attaining and maintaining compliance with the water quality standard. In short - it is a moving target."

NCFB has similar concerns about assessment units and segmentation as it applies not only to Falls Lake but to impoundments all across the state. NCFB understands that management strategies and TMDLs reference specific compliance points for TMDL and/or management strategy rule compliance. However, segmentation decisions do not just apply to those impoundments that already have a TMDL or a management strategy. Segmentation decisions also apply to those waters that have not yet had a TMDL or management strategy adopted.

Regarding segmentation, DWR addressed this issue in its document "North Carolina 2018 Draft 303(d) List Public Comment NC Division of Water Resources Responsiveness Summary" submitted to EPA March 14, 2019 and found at https://files.nc.gov/ncdeg/Water%20Ouality/Planning/TMDL/303d/2018L2018303d-DWR- Response-to-Comments-final.pdf as follows:
"It should be mentioned that North Carolina is currently in the process of nutrient criteria development, where spatial and temporal context is under consideration with regards to nutrient related standards (see https://deg.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-homepage/nutrient-criteria-development-plan) Any resulting changes to water quality standards that change how segmentation should occur will be addressed through the EMC in future assessment methodologies."

The issues raised by UNRBA related to Falls Lake well describe the problems with the current segmentation method as it applies to impoundments. We understand that there soon will be a rule proposed by DWR staff for a site-specific chlorophyll-a standard for High Rock Lake Reservoir. If a standard is adopted by the EMC for that lake, how many times will assessment units be split in High Rock Lake during the years it takes to consider and adopt management strategy rules? Or for other impoundments?

NCFB requests that the EMC and DWR address and appropriately revise their segmentation method as it relates to impoundments such that impoundments are not sliced into ever increasing numbers of assessment units. Further we request that the EMC and DWR do so not just in response to standards changes anticipated to arise from the nutrient criteria development process, but proceed with these revisions for the 2020 assessments and most certainly for the upcoming 2022 assessments.

DWR Response: *Please refer to responses directly to UNRBA Comments below.*

Upper Neuse River Basin Association

DWR Note: *These comments are related to the Integrated Report, Falls Lake specifically, not the 303(d) list, and conversations continue within the Department and the UNRBA. The UNRBA is currently in the process of developing updated models for Falls Lake and has also conducted special studies to further the ecological understanding of the lake. These studies will support the development of any future site specific approach(es), through the rules readoption process. Following rules readoption, DWR will determine if a site specific assessment approach is called for and adjust the Integrated Report Category Assignment Procedure as necessary.*

1. The 2020 Integrated Report for Falls Lake spans a data assessment time period that includes 2014, 2015, 2016, 2017, and 2018. Extensive water quality monitoring has been conducted by the Division of Water Resources and North Carolina State University (NCSU) researchers duringthis time period. The 2020 Integrated Report water quality assessment, however, excludes all data from the NCSU Center for Applied Aquatic Ecology. We note that the Division of Water Resources utilized data from the Center for Applied Aquatic Ecology (2012, 2013, 2014, 2015, 2016) for the 2018 version of the Integrated Report. Thus, three years of previously submitted data from the Center for Applied Aquatic Ecology were not considered for the 2020 assessment period (2014, 2015, 2016). This monthly data collection effort (at approximately 14 stations) was conducted by NCSU researchers with an approved QAPP as funded by the City of Raleigh. The UNRBA recognizes that the current 2020 EMC approved Assessment Methodology prioritizes data from the last two years of the assessment period. This valuable and informative data should not be ignored nor should the last two years of a five-year assessment period be prioritized over the previous three years of information.

DWR Response: *Regarding the inclusion of third-party data, DWR did not exclude new data from North Carolina State University Center for Applied Aquatic Ecology (CAAE). CAAE did not submit new data for the 2020 assessment. It is the responsibility of third-parties to submit data for assessment purposes. However, DWR did, out of courtesy, send data submittal requests to CAAE and others to be considered for the 2020 assessment. The only third-party to submit data was Charlotte Mecklenburg Stormwater.*

As a result of lack of new data, the 2018 assessments that used the entire five years of data were carried forward. For 2020, DWR carried forward the assessments from 2018 for the AUs where CAAE data were the only data, in accordance with the EMC approved Assessment Methodology ("Data and information used for the 2020 assessment were collected in calendar years 2014-2018. Assessments based on older data are carried forward if newer data or information were not available to change the previous assessment decision.").

2. In the 2020 Draft Integrated Report, Falls Lake above NC Highway 50 maintained similar Assessment Units to the 2018 version of the final Integrated Report. However, the UNRBA notes that the Division of Water Resources made a decision to split Assessment Unit 27-(5.5)b4dwhich is located in the lower portion of Falls Lake below Highway 50. Assessment Unit 27-(5.5)b4d is described as New Light Creek to Falls Dam. In the 2018 Integrated Report thisAssessment Unit was evaluated based on data collected from six different locations. Three collected by the Division of Water Resources and three collected by the Center for Applied Aquatic Ecology. The data from the three

locations monitored by the Center for Applied Aquatic Ecology was excluded from consideration in the 2020 version of the Draft IR and Assessment Unit 27-(5.5)b4d is divided into two separate segments:

27-(5.5)b4d1 - New Light Creek to Lower Barton Creek Arm with two stations.
27-(5.5)b4d2 - Lower Barton Cr Arm to Falls Dam with only one station.

As with previous Integrated Reports, the Division of Water Resources continues to change Assessment Units within Falls Lake based on a number of variable factors including the variability of observed water quality measurements. This approach challenges watershed management efforts and result in considerable confusion about attaining and maintaining compliance with the water quality standard. In short – it is a moving target. All available data should be included and consistent Assessment Units should be established based on the lakes limnologic / morphologic characteristics consistent with EPA guidance. It is also important that the assessment approach be aligned with the management strategy laid out in the Falls Lake Rules. The Draft IR now includes 12 assessment units (7 upstream and 5 downstream of Highway 50). Falls Lake has a robust monitoring program performed by both the Division of Water Resources and the Center for Applied Aquatic Ecology. Combined, this effort represents approximately 28 monitoring stations in the lake. This monitoring coverage is one of the most expansive in NC and the southeast. Applying the current Assessment Methodology will increase the number of Assessment Units over time and challenge the ability of ever attaining the water quality standard for chlorophyll-a in Falls Lake. This "station by station" approach doesn't properly reflect consideration of the physical morphology of the lake. Since the 2008 water quality assessment process, the number of Assessment Units for Falls Lake has changed from two to twelve. The increasing number of units has not been due to limnologic or morphological changes in the lake, it represents the increase in Assessment Unit divisions. Stable Assessment Units represent solid aquatic science principles and provide a more valid evaluation of the actual long term characteristics of the waterbody.

Falls Lake Integrated Reports by year and Assessment Units
(excluding Beaverdam Reservoir)

2008	2 Assessment Units	2016	10 Assessment Units
2010	3 Assessment Units	2018	11 Assessment Units
2012	3 Assessment Units	2020	12 Assessment Units
2014	6 Assessment Units		

DWR Response: *Regarding segmentation, DWR provided an extensive response in the 2018 Response to Comments (link provided for reference).*

As DWR has explained, the assessment units are not related to compliance of the Falls Lake rules and have never been aligned with the rules. It must be stressed that the number of assessments units has no impact on attainment of a not-to-exceed standard that must be met at all places. UNRBA asserts that assessment units should be based on limnologic/morphologic characteristics. DWR bases assessment units on assessment differences in chlorophyll a between stations (water quality characteristics), which often manifest due to localized impacts.

The other assertion made by UNRBA is that the AUs should be based on the rule compliance targets (15A NCAC 02B .0275(5)(a)), which, in itself, is contrary to any limnologic/morphologic characteristic. Also the rule establishes compliance targets that include all waters downstream of the target point where chlorophyll-a should be meeting criteria by a certain year. The number of assessment units has no

impact because, even if there was only one assessment unit, the rules still require all points (not AUs) downstream of the compliance targets to be meeting criteria. The number of assessment units in no way challenges attaining water quality standards. The challenge is the high excursion rate of the chlorophyll-a standard driven by nutrient loading. The number of assessment units increasing from 2008 is due to increasing excursion rates for chlorophyll-a and the inclusion of additional monitoring.

Again, as stated above, DWR acknowledges that the UNRBA is currently in the process of developing updated models for Falls Lake and has also conducted special studies to further the ecological understanding of the lake. These studies will support the development of any future site specific approach(es), through the rules readoption process. Following rules readoption, DWR will determine if a site specific assessment approach is called for and adjust the Integrated Report Category Assignment Procedure as necessary.

3. Assessment Unit 27-(5.5)b2

The UNRBA notes that the Ledge Creek Arm is considered in Category 3b indicating "data inconclusive" based on one monitoring location. With 54 observations for chlorophyll-a, the 40 µg/L standard was only exceeded 4 times in five years (7%). Yet, the Assessment Unit is not attaining the water quality standard because there were more than 2 observations exceeding 40 µg/L in the last two years of the assessment period. In 2017 and 2018, there were three observations for chlorophyll-a above 40 µg/L. In previous assessments, non-compliance was determined when 10% of samples collected during the assessment period exceeded the water quality criterion. This was later changed to 10% exceedance with 90% confidence. Under the 2020 Assessment Methodology, rather than being listed as meeting water quality standards, this assessment unit is listed as "data inconclusive". Not only are the "rules of the game" changing,but the changes are confusing, frustrate management efforts, and make it more difficult to "attain" water quality standards.

DWR Response: *This assessment was based on confidence in meeting criteria being below 70%, that it was not exceeding criteria in 2018 and had greater than 2 excursions in 2107-2018. This is consistent with EMC approved assessment methods. UNRBA asserts that the "rules of the game" have been changing since 2014 when the EMC adopted changes to the assessment methods to include confidence decision criteria. The assessment methods then had to be changed again to address delisting issues presented by the first change.*

It must be noted that none of these methodology changes or assessment unit delineation changes make it more difficult to attain water quality standards. In fact, when the Falls Lake rules were adopted in 2010, the assessment process was more stringent in determining impairment based on a greater than 10% exceedance without statistical confidence. DWR's recent draft Falls Lake 5-year Update shows that while there has been some reduction in nutrient loading from upstream tributaries, reductions have not met the goals outlined in the nutrient management strategy where one should expect to see improvements in in-lake chlorophyll-a levels.

4. Assessment Unit 27-(5.5)b3

This Assessment Unit, From Ledge Creek Arm to Lick Creek Arm, is listed twice for chlorophyll-a with two different assessment results:
Chlorophyll-a data Inconclusive (3b)

Chlorophyll-a data Exceeding Criteria with Statistical Confidence (4b)
The second result appears correct thus the first result should be deleted.

DWR Response: *The 3b assessment was removed, this was a fact sheet correction.*

5. Assessment Unit 27-(5.5)b4c
This Assessment Unit for New Light Creek includes only one monitoring station, the Center forApplied Aquatic Ecology's location FL8C. It appears that since no data was used in this assessment period from the Center for Applied Aquatic Ecology that the water quality assessment from the 2018 Integrated Report was reiterated in the Draft 2020 Integrated Report. However, the fact sheets indicate Chlorophyll-a data are "inconclusive" (1b). This is apparently in error as "inconclusive" and Category 1b are inconsistent. The final 2018 Integrated Reportsuggest the appropriate Category is Chlorophyll-a Meeting Criteria (1b).

DWR Response: *The 2018 Integrated Report assessment was carried forward based on no new data for this AU. In addition, based on current DWR data up reservoir and down reservoir that Exceeded Criteria and verbal confirmation from CAAE that their 2017-2018 data were similar in excursion rates to DWR data, "Data Assessment Inconclusive" is the appropriate category assignment.*

6. The UNRBA recognizes that 2020 has been a particularly difficult and challenging year for allof us. It is understood that the Division of Water Resources has encountered significant delay inreporting the 2020 cycle of the 303(d) and Integrated Reports. We understand that EPA has expressed expectations that the 2022 cycle of the 303(d) list and Integrated Report's should meetan established deadline of April 1, 2022. Thus, we anticipate a new 2022 draft water quality assessment in the not too distant future. In addition to our request to revise the 2020 cycle to address the points we've raised, we are hopeful that an updated assessment approach for Falls Lake will include additional data for the time period covering 2016 through 2020.

DWR Response: *The 2022 Integrated Report is currently on schedule for public review in November 2021. This is subject to EMC approval of the 2022 303(d) Listing and Delisting Methodology. CAAE has committed to submitting current data for the 2022 Integrated Report.*

SOUTHERN ENVIRONMENTAL LAW CENTER

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April 2, 2021

Via Electronic Mail

Andy Painter
N.C. Department of Environmental Quality
Division of Water Resources
1617 Mail Service Center
Raleigh, NC 27699-1167
TMDL303dComments@ncdenr.gov

Re: North Carolina's Draft 2020 303(d) List

Dear Mr. Painter,

On behalf of MountainTrue, the Broad Riverkeeper, the French Broad Riverkeeper, and the Green Riverkeeper we are submitting comments on North Carolina's draft 2020 § 303(d) list of impaired waters. Properly identifying impaired waters is essential to improving the quality, and preserving the best use, of the State's waters. Accurately identifying waterbodies where water quality standards are not attained also enables the State to prioritize its limited resources for remediating impaired waters.

SELC has previously alerted the Division of Water Resources' ("DWR") to deficiencies in its 303(d) listing methodology.[1] SELC remains concerned that the current methodology is inadequate to protect North Carolina's rivers and streams from impairment. SELC is also concerned that DWR's effective elimination of the trout waters temperature standard from the 303(d) listing process is unlawful and ignores pollution not associated with thermal discharges. In addition, DWR's inadequate sampling locations and methodologies, as well as its failure to use data from community partners, allow for significant and consequential holes in DWR's data to go uncorrected.

I. DWR's Listing and Delisting Methodology Remains Statistically Unsound and Scientifically Indefensible.

Under the Clean Water Act ("CWA"), North Carolina is required to use "all existing and readily available water quality-related data" to identify and compile a list of waters that do not meet state water quality criteria. 40 C.F.R. § 130.10(c)(6); 33 U.S.C. § 1313(d)(1)(A). In addition, North Carolina must provide documentation to support its "determination to list or not to list its waters," including a "description of the methodology used to develop the list." 40

[1] Letter from Southern Environmental Law Center to Cam McNutt, N.C. Dep't of Envtl. Quality, Div. of Water Res. (Jan. 18, 2019). These comments are incorporated by reference and attached to this letter.

C.F.R. § 130.7(b)(6)(i). Though this "methodology is not an item for approval" by EPA, North Carolina "must demonstrate good cause for not including a water or waters on the list." *Id.* § 130.7(b)(6)(iv). Thus, "[w]henever the EPA cannot conclude that an assessment methodology is appropriate, an independent review of data is done to determine whether all waterbody impairments are properly identified."[2]

DWR's current listing and delisting methodology is deeply flawed. It allows waters to be removed from the 303(d) list with little to no statistical confidence, treats the listing and delisting of waters impaired by pathogens in dramatically different fashions, and employs a widely rejected procedure for listing toxic pollutants.

A. DWR's delisting methodology allows waters to be removed from the 303(d) list with less statistical confidence than it required to list them.

For non-toxic pollutants, EPA guidance recommends listing waters as 303(d) impaired where more than 10% of samples exceed applicable water quality criteria.[3] This simple method is "intended to account for measurement error, naturally variable pollutant concentrations, and the potential that small data sets may not be fully representative of receiving water conditions."[4] States adopting this method, however, are free to take statistical variability into account to increase the confidence of their listing decisions.[5]

In 2014, North Carolina did just that when it added a "nonparametric hypothesis testing approach based on the binomial distribution" to its 10% raw exceedance score.[6] In simpler terms, DWR started requiring at least 90% statistical confidence for any 10% exceedance finding.[7] In practice, this means that more exceedances are required for an impairment decision than would be required by the 10% raw exceedance approach. For example, in a sample size of ten, two

[2] U.S. Envtl. Protection Agency, *Decision Document for the Approval of the North Carolina Department of Environment Quality 2018 Section 303(d) List* at 13 (Apr. 2, 2019) [hereinafter "2018 EPA Approval"], https://files.nc.gov/ncdeq/Water%20Quality/Planning/TMDL/303d/2018/20190522-NC-208-303d-Approval-Package.pdf; U.S. Envtl. Protection Agency, *Guidance for 2006 Assessment, Listing, and Reporting Requirements Pursuant to Sections 303(d), 305(b), and 314 of the Clean Water Act* at 30 (July 29, 2005) [hereinafter "2006 EPA Guidance"], https://www.epa.gov/sites/production/files/2015-10/documents/2006irg-report.pdf ("If EPA finds that the state's methodology is inconsistent with its water quality standards, and its application has resulted in an improper section 303(d) list, EPA may disapprove the list.").

[3] 2006 EPA Guidance, *supra* note 2, at 39–4.

[4] 2018 EPA Approval, *supra* note 2, at 10.

[5] *Id.*

[6] *Id.*

[7] *Id.* North Carolina was not required to select a 90% threshold. However, "any statistical conclusion that has a confidence level of less than 90% is considered not acceptable by most statistics practitioners." Pi-Erh Lin, Duane Meeter, & Xu-Feng Nui, *A Nonparametric Procedure for Listing and Delisting Impaired Waters Based on Criterion Exceedances* at 16 (2000), https://www.waterboards.ca.gov/water_issues/programs/tmdl/records/state_board/2003/ref1913.pdf.

exceedances would be needed to satisfy the more-than-10% rule. However, the nonparametric binomial approach would require three.[8]

EPA and statistical scientists agree, however, that once a waterbody is listed, "a different test is demanded by the statistics" to delist it.[9] The reason for this is that the binomial method assumes at the start that a waterbody is *not* impaired.[10] But once a waterbody *is* determined to be impaired, this "null hypothesis should be reversed."[11] If it is, a proper delisting determination "requires stronger evidence and a larger sample size than for listing, if the same level of confidence is required."[12] For example, a delisting determination with 90% statistical confidence would require "a minimum of 22 samples with no exceedances observed."[13]

In spite of this scientific consensus, DWR chose not to apply a different statistical test for listings and delistings in 2014.[14] EPA allowed it but requested that the State develop a new procedure for 2016 to ensure that delistings were "handled appropriately in the future."[15] In 2016, DWR rejected this request and used the same 2014 methodology that "did not differentiate between listing and delisting, resulting in low confidence that delisted waterbodies were truly unimpaired."[16] EPA remonstrated DWR for using "faulty statistical logic" and conducted its own delisting assessment, ultimately determining that seventeen waterbodies should not have been delisted.[17]

In 2018, DWR employed a new delisting methodology. For those previously listed waters with an exceedance rate greater than 10% with less than 90% statistical confidence, waters are delisted "if there are less than 2 excursions of the criterion in newer data that have not been previously assessed."[18] For those previously listed waters with less than a 10% exceedance rate, waters are delisted "if there is greater than 40% statistical confidence that there is less than a 10% exceedance of the criterion or if there are less than 3 excursions of the criterion in newer

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[8] U.S. Envtl. Protection Agency, *Decision Document for the Partial Approval of the North Carolina Department of Environment Quality 2016 Section 303(d) List* at 12 (Dec. 8, 2016) [hereinafter "2016 EPA Approval"], https://files.nc.gov/ncdeq/Water%20Quality/Planning/TMDL/303d/2016/NC2016_303dDecisionPackage20161208%20%28003%29.pdf.

[9] *Id.*

[10] *Id.*

[11] *Id.* at 10.

[12] *Id.* App'x C at 2.

[13] *Id.*

[14] 2018 EPA Approval, *supra* note 2, at 10.

[15] *Id.*

[16] *Id.*

[17] 2016 EPA Approval, *supra* note 8, at 10.

[18] N.C. Dep't of Envtl. Quality, Div. of Water Res., *2018 303(d) Listing and Delisting Methodology* at 4 (Mar. 8, 2018) [hereinafter "2018 Methodology"], https://files.nc.gov/ncdeq/Water%20Quality/Planning/TMDL/303d/2018/2018%20Listing%20Methodology_ApprovedMarch2018.pdf.

data that have not been previously assessed."[19] Although SELC pointed out in comments[20] that neither of these delisting pathways provides for delisting decisions made with 90% statistical confidence—the bare minimum for an acceptable statistical conclusion[21]—DWR used them anyway. No changes were made to the delisting methodology for non-toxic pollutants in 2020.[22]

While DWR's current delisting methodology is an improvement over no methodology at all, it remains statistically indefensible. Its flawed methodology proceeds in two steps. At step one, DWR applies its *listing* procedure to determine whether waterbodies exceed criteria more than 10% of the time with more than 90% confidence. This is precisely what EPA has repeatedly warned it cannot do—apply the same test for listing and delisting without reversing the null hypothesis.[23] At step two, DWR further refines the results from step one by setting arbitrary exceedance limits for "newer" data to arrive at a delisting determination. But the damage has already been done. At no point does DWR reverse the null hypothesis. Instead, DWR once again passes off its listing methodology as its "delisting" procedure, which necessarily taints its results. This is the same "faulty statistical logic" as before.

Even if step one were not fundamentally flawed, step two is arbitrary because it does not consider sample size. The second half of DWR's procedure asks if there are either "less than 2" or "less than 3 excursions" of water quality standards in "newer" data from 2017–2018. However, DWR does not ask how many "newer" samples were taken. In other words, DWR's methodology does not assess whether this "newer" data included 10 "newer" samples or 100. One exceedance out of 10 samples would still be cause for concern; 1 out of 100 would not.

To illustrate, consider Buffalo Creek in Ashe County. DWR apparently proposes delisting Buffalo Creek for turbidity based on 1 exceedance out of 5 newer samples at step two.[24] Using this data alone, this means DWR's statistical confidence for delisting hovers around 8.1%.[25] Applying the correct nonparametric binomial test with the null hypothesis reversed shows that DWR would not achieve a 90% confidence level for its delisting decision based on 1 exceedance until it sampled 38 times.[26] DWR does not require this many samples in its methodology; it places no limits or requirements on sample size at all. Because these excursion

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[19] *Id.*

[20] *See supra* note 1.

[21] Lin et al., *supra* note 7, at 16.

[22] *Compare* N.C. Dep't of Envtl. Quality, Div. of Water Res., *2020 303(d) Listing and Delisting Methodology* at 4 (Nov. 14, 2019) [hereinafter "2020 Methodology"], *with* 2018 Methodology, *supra* note 18, at 3–4.

[23] 2016 EPA Approval, *supra* note 8, at 10; 2018 EPA Approval, *supra* note 2, at 10.

[24] N.C. Dep't of Envtl. Quality, Div. of Water Res., *BasinSummAMSCoalit1418and1718* [hereinafter "2020 Data"], https://files.nc.gov/ncdeq/Water%20Quality/Planning/TMDL/303d/2020/2020_DATA.zip.

[25] The delisting "level of confidence" was calculated using the Excel BINOM.DIST function: 1-[BINOM.DIST(#exceedances, #samples, 10% exceedance rate, TRUE)]. EPA used the same function to calculate confidence intervals in its 2016 partial approval of DWR's 303(d) list. *See* 2016 EPA Approval, *supra* note 8, App'x C at 3. If the full five-year data set is considered, the confidence level is slightly higher. *See infra* note 41.

[26] *See supra* note 25.

limits are arbitrary and untethered to the actual number of new samples performed, they are statistically unsound and DWR cannot rely on them.

In addition, the inclusion of a 40% statistical confidence level at step two is contrary to accepted statistical practice. The very researchers that DWR relied on to craft its listing procedure warned that "any statistical conclusion that has a confidence level of less than 90% is considered not acceptable by most statistics practitioners."[27] Here, DWR is allowing certain impaired waters to be delisted so long as it has 40% confidence that the true exceedance level would be lower than 10%. Grafting this unacceptably low confidence level onto DWR's *listing* methodology is no substitute for a true nonparametric binomial *de*listing procedure.

These statistically unsound practices have real-world consequences. For an example, consider the Cane River, home of the federally endangered Appalachian elktoe mussel. This rare mussel is only known to persist in seven scattered pockets in the Southern Blue Ridge.[28] The Nolichucky River system—including the Cane River—hosts perhaps the largest and most resilient population.[29] For that reason, protection of elktoe in the Nolichucky watershed "is *essential* to the conservation of the species."[30] However, the elktoe requires "cool, clean, well-oxygenated, moderate- to fast-flowing water" to survive.[31] For that reason, turbidity and sediment deposition are among the "most immediate threats to the remaining populations" of Appalachian elktoe in the Nolichucky River system.[32]

In 2018, the Cane River was listed as Category 5 impaired for turbidity.[33] For the current 2020 cycle, DWR's ambient monitoring data shows that this waterbody was sampled 49 times in the relevant five-year data period.[34] Eight of these 49 samples were exceedances.[35] Applying DWR's *listing* methodology—which, as highlighted above, is the faulty first step in DWR's *de*listing methodology—this translates to a 16.3% exceedance level with 88.8% confidence, just shy of the required 90%. If DWR had reversed the null hypothesis and applied the correct nonparametric binomial test, however, these same numbers would translate to a delisting

[27] Lin et al., *supra* note 7, at 16.

[28] U.S. Fish & Wildlife Serv., *Appalachian Elktoe (alasmidonta raveneliana) 5-Year Review* at 5 (2017) [hereinafter "2017 5-Year Review"].

[29] *Id.*

[30] Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Appalachian Elktoe, 67 Fed. Reg. 61,016, 61,029 (Sept. 27, 2002) (emphasis added).

[31] *Id.* at 61,018.

[32] *Id.* at 61,019; *see also* 2017 5-Year Review, *supra* note 28, at 16 (noting that "private forestry, agriculture, and development activities continue to result in the narrowing and loss of riparian buffers and streambank vegetation and an increase in the runoff of nonpoint-source pollutants" within the Nolichucky watershed).

[33] N.C. Dep't of Envtl. Quality, Div. of Water Res., *2018 NC Category 5 Assessments "303(d) List" Final* [hereinafter "2018 List"], https://files.nc.gov/ncdeq/Water%20Quality/Planning/TMDL/303d/2018/2018-NC-303-d--List-Final.pdf.

[34] *See* 2020 Data, *supra* note 24. For the 2020 303(d) assessment, DWR uses data from 2014–2018. 2020 Methodology, *supra* note 22, at 2.

[35] *See* 2020 Data, *supra* note 24.

decision confidence level of 5.2%.[36] Put differently, if we assume the Cane River is impaired for turbidity—which it currently is—then DWR is about 5% confident that the actual turbidity exceedance level on the river is less than 10%, which would require the river to be delisted. This is a statistically indefensible conclusion.

Yet because DWR is still not applying the correct statistical test to delistings, it erroneously moved on to the next prong of its delisting procedure. Because the Cane River had a greater than 10% exceedance rate with just under 90% confidence, DWR asks "if there are less than 2 excursions of the criterion in newer data that have not been previously assessed." DWR's ambient monitoring dataset shows 16 "newer" samples taken in 2017–2018.[37] Only 1 of these was an exceedance. Because this is "less than 2 excursions," DWR proposes delisting the Cane River. But as pointed out above, this conclusion has no statistical backing because it does not consider sample size. DWR would need to show 1 exceedance out of at least 38 samples to reach a 90% confidence level for its delisting decision based on this "newer" data only.

DWR ignores these statistical necessities and instead proposes delisting the Cane River from Category 5 to Category 3a.[38] This category is reserved for "cases where data are insufficient to determine if a parameter is meeting or exceeding criteria."[39] In other words, DWR acknowledges that it lacks the information to determine if it should delist the Cane River under its flawed procedure, then it delists it anyway. EPA has warned that "waters identified as impaired and listed on the 303(d) list in the previous reporting cycle [should] not be removed from the list and placed into Category 3 in the subsequent listing cycle unless the State can demonstrate good cause for doing so."[40] Lacking the data to *list* the Cane River is not a "good cause" for *de*listing it, for the reasons explained above.

In sum, DWR's delisting methodology is a compounding cascade of statistical errors. The results are highly flawed delistings like that proposed for the Cane River. These erroneous delistings threaten biota like the Appalachian elktoe that depend on unimpaired aquatic resources

[36] These levels were calculated in Microsoft Excel using the BINOM package. *See supra* note 25.

[37] *See* 2020 Data, *supra* note 24.

[38] N.C. Dep't of Envtl. Quality, Div. of Water Res., *North Carolina 2020 Draft 303(d) List*, https://files nc.gov/ncdeq/Water%20Quality/Planning/TMDL/303d/2020/NC_2020_DRAFT_303D_LIST_PR.pdf. [hereinafter "2020 List"]. DWR's current practice is to categorize waters with an exceedance rate greater than or equal to 10% with less than 90% confidence as Category 3a. N.C. Dep't of Envtl. Quality, Div. of Water Res., *Draft 2020 Integrated Report Category Assignment Procedure* at 5 (Jan. 29, 2021) [hereinafter "2020 Assignment Procedure"], https://files.nc.gov/ncdeq/Water%20Quality/Planning/TMDL/303d/2020/2020-Integrated-REport-Category-Assignment-Procedures.pdf.

[39] 2020 Assignment Procedure, *supra* note 38, at 5.

[40] U.S. Envtl. Protection Agency, *Information Concerning 2010 Clean Water Act Sections 303(d), 305(b), and 314 Integrated Reporting and Listing Decisions* at 6 (May 5, 2009), https://www.epa.gov/sites/production/files/2015-10/documents/2009_05_06_tmdl_guidance_final52009.pdf.

to survive. DWR must correct its methodological approach and relist the Cane River and others like it as impaired.[41]

B. DWR also removes waters impaired with pathogens from the 303(d) list with less statistical confidence than it required to list them.

DWR employs a special listing and delisting procedure for pathogens. Waters must be listed for fecal coliform when the geometric mean of at least five consecutive samples examined during any 30-day period exceeds 200 colonies per 100 mL of water, or greater than 20% of the samples exceed 400 colonies per 100 mL of water.[42] Similarly, waters must be listed for enterococci bacteria when the geometric mean of at least five samples taken within any 30-day period exceeds 35 enterococci per 100 mL of water.[43] Both of these tests are near word-for-word copies of North Carolina's governing water quality criteria.[44]

"[B]ecause at least five samples collected within a 30-day period are required"[45] for both fecal coliform and enterococci, DWR usually cannot use its ambient monitoring data for pathogen-listing purposes. Ambient data are typically collected on a monthly basis, making them inappropriate for the "5 in 30" test that pathogen listings require. However, DWR does use its ambient data as a coarse filter to identify locations with annual geometric means above the water quality criteria that might be suited for "5 in 30" follow-up testing.[46] Unfortunately, "[r]esource limitations may hinder immediate follow-up monitoring in locations not identified as Primary Recreation Use."[47] In short, waters generally cannot be listed for pathogens based on ambient data alone due to the relatively strict listing requirements, and resource limitations may prevent DWR from following up even when those ambient data indicate a potential problem.

Pathogen delisting decisions, however, are much easier to make under DWR's procedures. For example, waters are delisted for fecal coliform if the geometric mean is less than 200 colonies per 100 mL in *monthly* samples and less than 20% of the samples exceed 400 colonies per 100 mL in *monthly* samples. Likewise, waters are delisted for enterococci if the geometric mean is less than 35 enterococci per 100 mL in *monthly* samples. DWR's methodology does not describe how many monthly samples are used to calculate this "geometric mean."[48] At any rate, because a delisting decision only requires *monthly* samples, this means that

[41] A quick survey of DWR's data revealed several other erroneous delistings. For example, DWR only has 71.5% confidence in delisting the First Broad River (4 exceedances out of 59 samples), and 22.5% confidence in delisting Buffalo Creek (1 exceedance out of 9 samples).

[42] 2020 Methodology, *supra* note 22, at 8.

[43] *Id.*

[44] *See* 15A N.C. Admin. Code 02B .0211(7), 15A N.C. Admin. Code 02B .0220(6)

[45] 2018 EPA Approval, *supra* note 2, at 15.

[46] *Id.*

[47] *Id.*

[48] 2020 Methodology, *supra* note 22, at 8. If DWR is calculating an *annual* geometric mean using these monthly samples, that is further proof that DWR's delisting methodology is completely divorced from the relevant water quality standard. The legislature created a standard based on a geometric mean within a 30-day time period—not an annual mean.

DWR's ambient monitoring data—which is too coarse to be used for listings—*can* be used for delistings. No resource-intensive follow-ups are required.

This methodology is legally and scientifically indefensible.[49] Legally, North Carolina's water quality standards establish a geometric limit based on a minimum of five samples collected *within* a 30-day time period. Thus, by definition, geometric means calculated from *monthly* samples cannot be used to assess whether this water quality standard is being met. Scientifically, if data collected monthly is too sparse to support a listing, it is also too spotty to support a delisting. And as a matter of statistical practice, if it requires a certain level of confidence to list a waterbody, it should require an equal level of confidence to delist it. Averaged monthly samples provide no statistical backing for concluding that a waterbody is no longer impaired for pathogens.

The methodology also has a real-world impact on streams threatened by fecal coliform and/or enterococci. In 2016, the French Broad River, form Mud Creek to Highway 146, was listed as impaired for fecal coliform after violating the "5 in 30" standard. DWR delisted the segment in 2018 without repeating the "5 in 30" monitoring the warranted listing in the first place. DWR did not conduct "5 in 30" monitoring in the segment this listing cycle though monthly sampling documented multiple exceedances of the 400 colonies per 100 mL standard. Data submitted to DWR by the French Broad Riverkeeper, which DWR did not use to assess compliance, also continues to indicate that fecal coliform is a problem in the French Broad River. But because DWR used a faulty methodology to delist the segment, and has not re-performed the "5 in 30" monitoring that justified the original listing, the segment remains unlisted. This is problematic because it allows a potential fecal coliform problem to linger in a river that receives significant public use.

DWR "must demonstrate good cause for not including a water or waters on the list." 40 C.F.R. § 130.7(b)(6)(iv). Because DWR's delisting methodology for pathogens is fundamentally flawed, it cannot be the basis of a delisting decision.

C. <u>DWR cannot apply its "one-size-fits-all" statistical approach to the listing of toxic pollutants.</u>

Toxic pollutants "react and behave differently in the environment than . . . naturally variable pollutants" like sediment, temperature, and pH.[50] Unlike conventional pollutants, toxics such as metals "do not generally have wide variability in concentration under natural conditions that would still be protective of the designated use."[51] In other words, even modest spikes in toxicity levels can have dramatic effects on the aquatic ecosystem.[52] For that reason, EPA does not recommend using the 10% exceedance approach for toxic pollutants.[53] This test, by its very

[49] *Id.*

[50] 2018 EPA Approval, *supra* note 2, at 11.

[51] *Id.*

[52] *Id.* at 12.

[53] 2006 EPA Guidance, *supra* note 2, at 39.

nature, assumes "that the water quality for a waterbody would be considered protective of aquatic life if the criterion truly were exceeded up to [10%] of the time."[54] But this "one-size-fits-all statistical approach ignores the principle that exceedance frequencies associated with toxic pollutants should be based on biological endpoints and exposure-response relationships."[55] Instead, EPA recommends "use of once in three year maximum allowable excursion recurrence frequency" for toxics—the so-called "1-in-3 method."[56] Many states have incorporated this test into their toxic assessment methodology.[57]

North Carolina, however, still uses the 10% exceedance test for toxic pollutants. Though "DWR is not required to use the EPA-recommended one-in-three method," it has never "provided a scientifically defensible rationale to support [its] Listing Methodology for toxics."[58] For that reason, during each of the past three 303(d) cycles EPA has rejected DWR's toxics findings and independently reviewed North Carolina's water quality data to determine whether all waterbody impairments were identified.[59] EPA will be forced to do so again in 2020.[60]

DWR must either adopt EPA's 1-in-3 method for toxics or supply some data or supporting science showing that the 10% "exceedance rate is reflective of [North Carolina's water quality criteria], is protective or is scientifically defensible for toxics."[61]

II. North Carolina's 303(d) List Ignores Trout Waters Temperature Exceedances.

It is hard to overstate the importance of trout to North Carolina. Every year, trout fishing generates $383.3 million in economic value and supports nearly 3,600 jobs.[62] However, the fish this industry depends on require cold, clean, oxygen-rich water to survive and thrive. This makes trout—and the trout sport-fishing industry—especially vulnerable to climate change.[63] In fact, by 2060, Western North Carolina will likely see 10–20 more days a year when temperatures rise

[54] 2018 EPA Approval, *supra* note 2, at 12.

[55] *Id.*

[56] 2006 EPA Guidance, *supra* note 2, at 42.

[57] 2018 EPA Approval, *supra* note 2, at 12.

[58] 2016 EPA Approval, *supra* note 8, at 22. In 2016, DWR did submit a white paper attacking EPA's 1-in-3 method. But as EPA noted in response, "[w]hile this document provides a 'Retrospection of the ">1-in-3" Assessment Method,' it does not provide a rationale to support a ten percent exceedance rate with a confidence level." *Id.*

[59] 2018 EPA Approval, *supra* note 2, at 12–13.

[60] *Id.* at 13 ("Whenever the EPA cannot conclude that an assessment methodology is appropriate, an independent review of data is done to determine whether all waterbody impairments are properly identified.").

[61] *Id.* at 12.

[62] N.C. Wildlife Res. Comm'n, *Mountain Trout Fishing: Economic Impacts on and Contributions to North Carolina's Economy* at iv (2015), https://www ncwildlife.org/Portals/0/Fishing/documents/Mountain%20Trout%20Fishing%20Economic%20Impacts%20on%20and%20Contributions%20to%20North%20Carolinas%20Economy.pdf.

[63] Emma Johnson, *Climate Change Challenges Trout Industry in North Carolina*, Carolina Public Press (Feb. 17, 2021), https://carolinapublicpress.org/42527/climate-change-challenges-trout-industry-in-north-carolina/.

above 35º C (95º F), increasing the chances that water temperatures will rise above 21.1º C (70º F)—levels that can be lethal to trout.[64]

This existential threat to trout and the trout-fishing industry makes it even more important to control thermal pollution using available regulatory tools. For example, under North Carolina's waterbody classification scheme, designated trout waters receive additional protections including enhanced temperature limits. However, DWR has largely declined to enforce these limits due to a flawed interpretation of state and federal law that overlooks contributions to water quality violations by nonpoint sources. DWR must take steps to address thermal pollution to trout waters to ensure a valuable ecological and economic resource is not lost forever.

A. North Carolina has special temperature protections for trout waters.

All North Carolina surface waters are protected by temperature criteria. Specifically, water temperatures are "not to exceed 2.8 degrees C (5.04 degrees F) above the natural water temperature, and in no case to exceed 29 degrees C (84.2 degrees F) for mountain and upper piedmont waters and 32 degrees C (89.6 degrees F) for lower piedmont and coastal plain Waters." 15A N.C. Admin. Code 2B .0211(18). For those waterbodies that are also designated as "trout waters," the temperature "shall not be increased by more than 0.5 degrees C (0.9 degrees F) due to the discharge of heated liquids, *but in no case to exceed 20 degrees C* (68 degrees F)." *Id.* (emphasis added).

Although these standards are written in absolute terms, DWR does not require absolute compliance to avoid 303(d) listing. Instead, DWR generally assesses whether state water quality criteria—including temperature—are exceeded in more than 10% of samples with greater than or equal to 90% statistical confidence.[65] Waterbodies that meet this numeric criterion must be listed;[66] those that do not may still need to be listed if certain other conditions are met.[67]

Although DWR recognizes a 20º C limit for some trout waters in its draft 2020 303(d) list,[68] it omits this criterion for at least forty other designated trout-water segments.[69] Based on a

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[64] *Id.*

[65] Sample size must be greater than nine. 2020 Methodology, *supra* note 22, at 3–4.

[66] North Carolina carves out small exceptions for dissolved oxygen and pH in swamp waters if exceedances are due to natural conditions. *Id.* at 5.

[67] For example, pollutants with exceedance levels above 10% with less than 90% statistical confidence must still be listed if at least three newer samples exceeded criteria with at least 90% statistical confidence. *Id.* at 3–4.

[68] *See, e.g.*, 2020 List, *supra* note 38, at 7 (finding that Davis Creek—designated trout waters— is "[m]eeting" the "20ºC" water temperature criteria based on legacy random ambient monitoring data).

[69] *Id.* Trout waters that assessed compliance for the 29 or 32º C standard but did not include a reference to the 20º C limit include: Broad River (Lake Lure below elevation 991) (B Tr) (AU ID: 12497); Cedar Creek (C Tr) (12537); First Broad River (WS-V Tr) (12758); Wilson Creek (B Tr ORW) (1034); French Broad River (B Tr) (10925); Davidson River (WS-V B Tr) (11278); Avery Creek (B Tr) (11290); Mills River (WS-II Tr HQW) (11421); Pigeon River (WS-III Tr CA) (10565); Allen Creek (WS-I Tr HQW) (10607); Johnathans Creek (C Tr) (10684); Cataloochee Creek (C Tr ORW) (10798); North Toe River (WS-IV Tr) (11971); North Toe River (C Tr) (11974); South Toe River (B Tr ORW) (12079); Cane River (C Tr) (12270); Valley River (C Tr) (3278); Cullasaja River (Lake Sequoyah) (WS-III Tr CA) (6497); Nantahala River (B Tr ORW) (7235); Nantahala River (Nantahala Lake)

review of the underlying data during the relevant time period—data from DWR's own Ambient Monitoring System stations—at least eleven of these forty segments exceeded 20º C in more than 10% of samples with at least 90% confidence.[70] Under a straightforward application of DWR's listing methodology, these trout waters should be listed as impaired for temperature. Yet they are not.

The reason for this, according to DWR, is simply the way the agency has historically interpreted the trout-waters standard. Specifically, since at least 2008 DWR has interpreted the standard's temperature component "to only be assessed with thermal discharges."[71] And even when thermal discharges are present, because DWR has never "determined background conditions"—though EPA has recommended doing just that since 2008[72]—any findings are necessarily "inconclusive."[73] As a result, DWR's current practice is to list trout waters with at least a 10% exceedance rate as Category "3a" waterbodies that do not require a TMDL.[74] Thus, unless something changes, exceedances of the trout-waters temperature standard can *never* lead to 303(d) listing—nor have they, for at least the past twenty-three years.[75]

(B Tr) (7236); Tuckaseegee River (Bear Creek Lake (WS-III B Tr) (8610); Tuckaseegee River (Cedar Cliff Lake) (WS-III B Tr) (8611); Board Cove Branch (C Tr) (8906); Wolf Creek (Wolf Creek Lake) (WS-III B Tr HQW) (9098); Little Tennessee River (Cheoah Lake) (C Tr) (5606); Little Tennessee River (Calderwood Lake) (C Tr) (5607); Cheoah River (C Tr) (6229); Cheoah River (Santeetlah Lake below elevation 1940 MSL) (B Tr) (6230); Flattop Branch (WS-II Tr HQW CA) (122); Norris Branch (WS-II Tr HQW CA) (204); Buffalo Creek (C Tr +) (233); Brush Creek (C Tr) (290); Crab Creek (C Tr) (299); Dan River (C Tr) (6481) (32-degree limit); Horsepasture River (C Tr) (10512); Watauga River (B Tr HQW) (13574); Watauga River (B Tr HQW) (13605); Buckeye Creek (WS-II Tr HQW CA) (12430); Yadkin River (WS-IV B Tr) (13904); Yadkin River (WS-IV B Tr) (13905).

[70] N.C. Dep't of Envtl. Quality, *BasinSummAMSCoalit1418and1718*, https://files nc.gov/ncdeq/Water%20Quality/Planning/TMDL/303d/2020/2020_DATA.zip. These segments include: First Broad River at SR 1530 NR Casar (WS-V Tr) (station A4800000) (37.037% exceedance with 100% confidence); French Broad River at U.S. 178 at Rosman (B Tr) (E0150000) (18.182% exceedance with 93.175% confidence); Pigeon River at NC 215 NR Canton (WS-III Tr CA) (E5495000) (21.154% exceedance with 98.734% confidence); North Toe River at U.S. 19E NR Ingalls (WS-IV Tr) (E7000000) (17.021% exceedance with 90.682% confidence); North Toe River at SR 1162 at Penland (C Tr) (E8100000) (33.333% exceedance with 99.998% confidence); South Toe River at SR 1168 NR Celo (B Tr ORW) (E8200000) (20.455% exceedance with 97.184% confidence); Cane River at SR 1343 NR Sioux (C Tr) (E9850000) (24.444% exceedance with 99.592% confidence); Valley River at U.S. 74 and 19 and 129 at Tomotla (C Tr) (F4000000) (21.212% exceedance with 95.81% confidence); Cheoah River at SR 1138 at Robbinsville (C Tr) (G9550000) (20.588% exceedance with 95.164% confidence); Horsepasture River at N.C. 281 NR Union (C Tr+) (H6000000) (17.949% exceedance with 91.02% confidence); Watauga River at SR 1121 NR Sugar Grove (B Tr HQW) (L4700000) (20.37% exceedance with 98.332% confidence). *Id.*

[71] N.C. Dep't of Env't and Nat. Res., *Responsiveness Summary on the Draft 2008 303(d) (Category 5) List Submitted April 1, 2008* at 13, https://files nc.gov/ncdeq/Water%20Quality/Planning/TMDL/303d/Draft%26Revised2008ResponseSummaries.pdf.

[72] U.S. Envtl. Protection Agency, *Approval of State of North Carolina's 2008 Section 303(d) List Submittal* at 13 (Mar. 9, 2010) [hereinafter "2008 EPA Approval"], https://files nc.gov/ncdeq/Water%20Quality/Planning/TMDL/303d/EPA%202008%20303d%20Approval.pdf.

[73] *Id.*; N.C. Div. of Water Quality, *2008 Use Assessment Methodology* at 8, https://files nc.gov/ncdeq/Water%20Quality/Planning/TMDL/303d/2008%20methods%2020100505.pdf.

[74] *See, e.g.*, *id.* at 8. Category 3a waterbodies are assigned "where data are insufficient to determine if a parameter is meeting or exceeding criteria." 2020 Assignment Procedure, *supra* note 38, at 5.

[75] *See* N.C. Dep't of Envtl. Quality, *Integrated Report Files*, https://deq nc.gov/about/divisions/water-resources/planning/modeling-assessment/water-quality-data-assessment/integrated-report-files.

This effective elimination of the trout-waters temperature standard from the 303(d) and TMDL process is arbitrary, capricious, and contrary to controlling law.

B. The plain language of the trout-waters temperature standard requires DWR to assess compliance with the 20º C limit whether thermal discharges are present or not.

To understand whether DWR's interpretation of the trout-waters temperature standard is appropriate, it is helpful to review the general surface-water temperature standard[76] in full:

> Temperature: not to exceed 2.8 degrees C (5.04 degrees F) above the natural water temperature, and *in no case to exceed* 29 degrees C (84.2 degrees F) for mountain and upper piedmont waters and 32 degrees C (89.6 degrees F) for lower piedmont and coastal plain Waters; the temperature for trout waters shall not be increased by more than 0.5 degrees C (0.9 degrees F) due to the discharge of heated liquids, but *in no case to exceed* 20 degrees C (68 degrees F).

15A N.C. Admin. Code 2B .0211(18) (emphasis added).

On its face, the standard mandates that "in no case" may trout waters exceed 20 ºC. "[I]n no case" means "never." The independent clause containing this phrase is without exception. It does not, for example, state that trout waters are "in no case to exceed 20 degrees C due to the discharge of heated liquids."

The preceding clause, by contrast, begins by stating that "the temperature for trout waters shall not be increased by more than 0.5 degrees C . . . *due to the discharge of heated liquids*." *Id.* (emphasis added). The word "but" then indicates that the 20-degree limit applies "notwithstanding" the preceding phrase.[77] Thus, a straightforward reading of the 20 ºC limit is that it applies to all designated waters, notwithstanding the 0.5 ºC limit on temperature changes caused by discharges. The two limits are complementary; one applies to all trout waters, the other applies to thermal discharges into trout waters.

A comparison with the wording of the Class SC tidal-water temperature criteria drives this conclusion home. These criteria prohibit temperature increases "above the natural water temperature by more than 0.8 degrees C" in the summer and 2.2 ºC in other months, while also mandating that waters "shall *in no case* exceed 32 degrees C (89.6 degrees F) *due to the discharge of heated liquids*." 15A N.C. Admin Code 2B .0220(17) (emphasis added). Because the phrase "due to the discharge of heated liquids" follows the limit, there is no question that it refers to thermal discharges. If North Carolina had wished to restrict the trout standard in the same way, it could have appended similar language to the 20 ºC limit. But it did not.

Context from the first half of the general surface-water temperature standard lends even more support for this conclusion. The full standard starts by setting a delta limit applicable to

[76] Most of North Carolina's other surface-water classifications adopt these standards by reference. *See, e.g.*, 15A N.C. Admin. Code 2B .0212 ("Water quality standards applicable to Class C waters as described in Rule .0211 of this Section shall also apply to Class WS-I waters.").

[77] *But*, Merriam Webster (11th ed. 2003), https://www merriam-webster.com/dictionary/but.

thermal discharges: temperature may not be increased by more than 2.8 ºC above baseline.[78] It then immediately states a limit applicable to all waters: temperatures are "*in no case to exceed*" 29 or 32 ºC, depending on location. The trout-waters standard is functionally identical: it sets a delta limit applicable to thermal discharges—temperature may not be increased by more than 0.5 ºC—then immediately pivots to a limit applicable to all trout waters: temperatures are "*in no case to exceed* 20 degrees C." DWR does not suggest that 29 and 32 ºC limits only apply to thermal discharges. Given this context, DWR cannot interpret the almost identical language from the general and trout temperature standards differently.

In short, the plain language of the trout-waters standard requires DWR to assess compliance with the 20 ºC limit whether or not a thermal discharge is present. Context provided by other temperature limits confirms this plain-language reading.

C. The Clean Water Act requires DWR to list waters impaired by point or nonpoint sources.

Section 303(d) of the CWA requires states to list those waters for which "effluent limitations"—a.k.a. point-source pollution limits—are, by themselves, insufficient to protect water quality standards. 33 U.S.C. § 1313(d)(1)(A); *see also* 40 C.F.R. § 130.2(j). The statute does not ask whether waterbodies are violating such standards due to point-source or nonpoint-source pollution. *Pronsolino v. Nastri*, 291 F.3d 1123, 1137 (9th Cir. 2002) ("Nothing in § 303(d)(1)(A) distinguishes the treatment of point sources and nonpoint sources as such . . . . Water quality standards reflect a state's designated uses for a water body and do not depend in any way upon the source of pollution."). It only asks if effluent limitations alone are "not stringent enough" to protect water quality. 33 U.S.C. § 1313(d)(1)(A). And logically, if a waterbody lacking point-source polluters already exceeds water quality criteria, then by definition no "effluent limitations" will be "stringent enough to implement" those criteria—there is no point source to limit. *Pronsolino*, 291 F.3d at 1137 (finding that "as a matter of law" effluent limitations are "not stringent enough" to achieve water-quality standards for impaired waters "impacted only by nonpoint sources").

As a result, states must list waterbodies whether they are impaired from "point sources only, nonpoint sources only, or a combination of the two."[79] *Id.* at 1132–33. "[T]he language [of the CWA] admits of no other reading." *Id.* at 1139; *see also* 40 C.F.R. § 130.7(c)(1)(ii) ("TMDLs shall be established for *all* pollutants preventing or expected to prevent attainment of water quality standards." (emphasis added)). Any other construction "would, for no apparent reason, require the states . . . to monitor waters to determine whether a point source had been added or removed, and to adjust the § 303(d)(1) list . . . accordingly." *Pronsolino*, 291 F.3d at

[78] Although this clause does not itself mention discharges of heated liquids, DEQ interprets this standard to prohibit thermal dischargers from increasing water temperatures by more than 2.8 ºC. *See, e.g.*, Dep't of Envtl. Quality, NPDES Permit NC0000396 at 5 (Apr. 9, 2020), https://files.nc.gov/ncdeq/Coal%20Ash/2020-actions/NC0000396-Final-Permit.pdf.

[79] And indeed, EPA's "long-standing interpretation of section 303(d)" is that the "listing requirement applies to waters impaired by point and/or nonpoint sources." 2018 EPA Approval, *supra* note 2, at 4.

1139. "There is no statutory basis for concluding that Congress intended such an irrational regime." *Id.*

DWR does not argue otherwise. Nor can it: state law provides that "water quality standards relate to the condition of waters as affected by the discharge of sewage, industrial wastes, *or other wastes including those from nonpoint sources and other sources of water pollution*." 15A N.C. Admin. Code 02B .0205 (emphasis added). In general, when it comes to listing waterbodies on the 303(d) list, DWR makes no attempt to distinguish between impairment due to point and/or nonpoint sources. This is true of other trout-waters standards, including enhanced limits on chlorophyll a, dissolved oxygen, cadmium, toluene, and turbidity. Thus, to the extent that DWR's interpretation of the trout-waters temperature standard is premised on the notion that nonpoint-source pollution cannot contribute to 303(d) listing, it is both incorrect as a matter of law and inconsistent with its own practices. North Carolina is obliged to identify impairments to water criteria no matter the source of pollution.[80] Thermal pollution is no different.[81]

D. DWR cannot indefinitely avoid analyzing thermal "background conditions."

For more than a decade, DWR has declined to "list trout waters for temperature excursions where thermal discharges are present because [it has] not determined background conditions."[82] For just as long, EPA has recommended that the "State focus [its] monitoring program to determine background conditions and to assess such waters."[83] It is not clear why DWR has not complied with this recommendation. But until it does, the trout-waters standard will continue to go unenforced.

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[80] The North Carolina Administrative Code does provide that "[w]ater quality standards shall not be considered violated if values outside the normal range are caused by natural conditions." 15A N.C. Admin. Code 2B .0205. But this mandate is irrelevant to the question at hand: whether DWR may decline to list trout waters impacted by nonpoint-source or other pollution. Thermal nonpoint-source pollution—such as dispersed runoff over hot "impervious surfaces such as streets and rooftops"—is not a "natural condition." U.S. Envtl. Protection Agency, *Polluted Runoff: Nonpoint Source (NPS) Pollution*, https://www.epa.gov/nps/nonpoint-source-urban-areas (last updated Oct. 7, 2020).

[81] EPA has previously advised that:

> waterbodies that do not meet an applicable State water quality criterion for temperature or a designated use due to temperature should be listed. Listing is appropriate because the applicable water quality standard is not met. Heat, the cause of the impairment, is defined as a "pollutant" under section 502(6) of the Clean Water Act and can be allocated. It is immaterial to the listing decision whether the source of the temperature-related impairment is a thermal discharge or solar radiation. Both are sources of heat, and the heat can be allocated through the TMDL process.

U.S. Envtl. Protection Agency, *National Clarifying Guidance for the 1998 State and Territory Section 303(d) Listing Decisions* at 5, https://www.epa.gov/sites/production/files/2015-10/documents/lisgid.pdf.

[82] 2008 EPA Approval, *supra* note 72, at 13.

[83] U.S. Envtl. Protection Agency, *Decision Document for the Partial Approval of the North Carolina Department of Environment and Natural Resources' 2014 Section 303(d) List Submitted on March 31, 2014* at 12, https://files nc. gov/ncdeq/Water%20Quality/Planning/TMDL/303d/2014/NC_2014%20303%28d%29_finalDecisionDocument_07%2031%202014.pdf; *see also* 2008 EPA Approval, *supra* note 72, at 13.

It is also not clear why DWR does not already have the data it needs to assess compliance. Permittees under the National Pollutant Discharge Elimination System ("NPDES") are generally required to provide effluent data to DWR including temperature measurements. Many of these dischargers also assess upstream conditions to ensure that their effluent does not exceed state-mandated temperature delta limits between upstream and downstream. DWR uses these and other data collected by dischargers to issue permits and notices of violation. If these data are inappropriate for 303(d) listing purposes, DWR must explain why.

* * * * *

DWR's crabbed interpretation of the trout-waters temperature standard ignores loadings due to nonpoint sources, in contravention of state law and the CWA. Furthermore, DWR cannot avoid analyzing "background conditions" any longer. Western North Carolina's trout and the sport-fishing industry need and deserve more.

III. DWR Must Collect Data at Times and Locations that Reveal the Full Extent of Pollution.

The methodology and the monitoring locations underlying the draft 2020 303(d) list indicate that DWR is, in some cases, avoiding the most problematic sampling times and areas. This results in a list of impaired waters that underreports the State's pollution problem, effectively misinforming the public about the cleanliness of the waterways they use and enjoy. As the undersigned groups noted in our comments to the 2018 303(d) list, DWR's turbidity data was hampered by the failure to collect data immediately following weather events that increase sediment discharges. No information about weather conditions was included in the data set informing the 2020 list, so it is likely that this problem persists. We further note that the monitoring locations for at least three waterbodies appear to be too distant from the areas of most concern to effectively determine whether these waters are impaired.

A. DWR avoids collecting turbidity data during weather events that increase turbidity.

Under the state's Quality Assurance Project Plan ("QAPP"), ambient data for turbidity is collected by grab sample on a monthly basis.[84] However, "bad weather" is listed among reasons to delay sampling.[85] Given that turbidity typically intensifies following rainfall events, a monitoring program that declines to sample during or after "bad weather" is likely to under-record exceedances for pollutants like turbidity—especially in a region relatively prone to rainfall.

DWR's previous data collection on the North Toe River illustrates the problem. Through 2014, DWR reported data about precipitation in the twenty-four hours prior to sampling in the North Toe River. During that period, every reported exceedance of the turbidity standard

[84] N.C. Dep't of Envtl. Quality, Div. of Water Res., Ambient Monitoring System (AMS) Program Quality Assurance Project Plan § 2.1.3 (Feb. 2017) [hereinafter "QAPP"], https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/ecosystems-branch/ams-quality-assurance-project-plan.

[85] *Id.*

followed a rain event.[86] The 2020 data sets include no information on the proximity of data collection to weather events, but it is likely that this problem persists. Data from 2014 also shows that DWR's "monthly" sampling itself was highly variable—occurring anywhere from 12 days to 2.5 months apart.[87] An ambient monitoring program that samples at subjective intervals and avoids "bad weather" is likely to underreport turbidity exceedances.

B. Monitoring locations avoid some of the most polluted areas.

DWR's ambient monitoring locations also appear to avoid some of the most problematic areas, resulting in underreporting and unsupported delistings. For example, the section of the First Broad River between Shelby and the Broad River is proposed to be delisted for turbidity this year;[88] this delisting is also problematic for methodological reasons described above. Namely, if DWR had reversed the null hypothesis and applied the correct nonparametric binomial test to the First Broad River, then DWR would have 71.5% statistical confidence in delisting the First Broad, based on four exceedances in fifty-nine samples—which would be insufficient to delist this segment.[89] Community testing and observation also indicates that water quality in Shelby is poor, with very high turbidity and bacteria levels.[90] Notably, the more populated Shelby area is the part of this segment with the most recreational use. Yet this delisting is apparently based on sampling for turbidity at the Ambient Monitoring Station A6400000, which is about twelve miles downstream from Shelby.[91] Between Shelby and this monitoring station is a hydroelectric dam, which undoubtedly traps and settles a lot of the sediment. Without monitoring in Shelby, DWR's analysis is incomplete and the delisting would leave the public unprotected.

Buffalo Creek and Sandy Run are two other waterways suffering from a similar lack of targeted testing. There is no monitoring on Buffalo Creek above Moss Lake, where community data and observation indicates very bad conditions for both bacteria and turbidity.[92] Moss Lake will remain listed for temperature, but the public will be uninformed and unprotected when it comes to other pollutants. Similarly, in Sandy Run, the DWR monitoring site is just upstream of an ATV park that causes high turbidity levels in the stream.[93] Additionally, in preparation for the 2022 draft 303(d) list, we want to bring DWR's attention to White Oak Creek (AU 9-29-46). This segment continues to suffer from high turbidity events. DWR should make sure it is

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[86] *See* N.C. Dep't of Envtl. Quality, Div. of Water Res., *2018 Integrated Report Data*, https://files.nc.gov/ncdeq/Water%20Quality/Planning/TMDL/303d/2018/2018_IR_Data.zip.

[87] For example, DWR sampled on Mar. 1, 2012, and again on Mar. 13, 2012; in contrast DWR sampled on Dec. 11, 2013, and not again until Feb. 25, 2014. *Id.*

[88] N.C. Dep't of Envtl. Quality, Div. of Water Res., *NC 2020 Draft Delistings from Category 5* at 1, https://files.nc.gov/ncdeq/Water%20Quality/Planning/TMDL/303d/2020/NC_2020_DRAFT_DELISTINGS02012021.pdf.

[89] *See supra* note 25.

[90] Swim Guide, First Broad @ Grover Street, https://www.theswimguide.org/beach/9127.

[91] *See* 2020 Data, *supra* note 24.

[92] *Id.*

[93] *Id.*

appropriately monitoring this segment so it has data that reflects true conditions rather than avoid the most problematic areas.

By using monitoring stations that avoid the most problematic areas, DWR significantly underreports pollution. This results in a lack of remedial measures, which would be triggered by the 303(d) listing, and it also results in an underinformed public that is more likely to use polluted waters. In light of these holes in the data from DWR monitoring stations, it is even more important for DWR to use "all existing and readily available"[94] data, including data from community partners. It is also important for DWR to use statistically sound delisting procedures, since data gaps already result in underreporting of pollution exceedances.

IV. DWR Must Use All Available Data to Inform the 303(d) List.

Federal regulations require the State to "assemble and evaluate all existing and readily available water quality-related data and information to develop the [303(d)] list." 40 C.F.R. 130.7(b)(5). States not only must use all available data, but must "actively solicit" research from organizations and groups reporting water quality problems. *Id.* Thus, data from the community, particularly data that follows the State's own quality-assurance guidelines, must be used in North Carolina's 303(d) listing process. Accordingly, DWR's website contains a "standing solicitation for data," and suggests that data sets including an approved Quality Assurance Project Plan ("QAPP") will be used for water quality assessment.[95]

While DWR's website suggests that community data will be used in accordance with federal regulations, the undersigned groups have learned that data submitted is not necessarily used to create the 303(d) list. Instead, it is subject to a "tiering" system that disqualifies certain data from use in determining impairment. DWR has offered no public explanation of this tiering system, particularly to explain why data produced under a State-approved QAPP does not always qualify for use in its 303(d) process. Instead, the agency only warns that they "only use the highest quality data for regulatory decision-making and water quality assessment."[96]

Members of the community, including the undersigned groups, have specifically sought to operate under a QAPP so that their data will be used to inform the State's programs protecting the waters they use and enjoy, including formation of the list of impaired waters. Moreover, EPA guidance notes that "[h]aving CWA 303(d) Program priorities informed by data and information from other relevant programs will help achieve and demonstrate environmental results over

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[94] 40 C.F.R. 130.7(b)(5).

[95] N.C. Dep't of Envtl. Quality, Div. of Water Res., *Water Quality Data Assessment*, https://deq.nc.gov/about/divisions/water-resources/planning/modeling-assessment/water-quality-data-assessment (last accessed 4/1/21) ("Local governments and environmental groups as well as industry, municipal and university coalitions also provide data. Submitted data sets must include an approved Quality Assurance Project Plan (QAPP) to assure that the data were collected in a manner consistent with agency data."); *see* QAPP, *supra* note 84.

[96] QAPP, *supra* note 84.

time." [97] NPDES permittees also provide data to DWR that could be used to expand and improve upon the 303(d) listing process.

Other deficiencies identified throughout these comments indicate a lack of thorough and appropriately targeted monitoring, which could be remediated through the use of data from the community and from permittees. As noted above, data provided by NPDES permittees on temperature could be used to inform the determination of thermal background conditions that EPA has mandated for years but that North Carolina has failed to perform. Sampling provided by NPDES permittees, as well as the undersigned groups and other community partners, could also be used to fill the temporal and geographic gaps in knowledge outlined above.

Proper utilization of data from community groups could make a material difference in DWR's listing decisions and the health of rivers and streams. For example, in 2018 DWR delisted the North Toe River (AUs 7-2-21.5 and -27.7) for turbidity using the flawed methodology discussed above and in the face of water quality data submitted by the French Broad Riverkeeper indicating continued impairment. Several hard-rock mines discharge turbid stormwater into this section of river which is home to trout and upstream of Appalachian elktoe habitat. DWR's delisting decision allows problems in the watershed to linger instead of correcting them as required under the CWA.

At minimum, the public should have access to DWR's process for accepting and rejecting data for use in the 303(d) process and elsewhere so it can understand these decisions. This is particularly true for community members who have spent significant resources to conform their water quality monitoring to the State's standards and have obtained DWR approval to operate under a QAPP. Failing to use all available data in accordance with the law leaves North Carolina's 303(d) list incomplete, and our waters without the full protections afforded by the CWA.

V. DWR Must Address the Pigeon River Impairment During Both the 303(d) Listing and the NPDES Permitting Procedures.

The proposed listed impaired area on the Pigeon River downstream from the Canton Paper Mill has expanded by several miles since 2018. Specifically, a new stretch of the Pigeon, from State Route 1642 (Main Street) to Crabtree Creek, is now proposed to be listed as impaired for benthos. This impairment is undoubtedly related to discharges from the Canton Paper Mill, which has been operating under an outdated and insufficiently restrictive 2010 NPDES permit.

EPA guidance encourages states to use CWA 303d prioritization as an opportunity "to integrate CWA 303(d) Program priorities with other water quality programs to achieve overall water quality goals," including the NPDES permitting program.[98] "Having CWA 303(d) Program priorities informed by data and information from other relevant programs will help

[97] Benita Best-Wong, EPA, *Memorandum: Information Concerning 2016 Clean Water Act Sections 303(d), 305(b), and 314 Integrated Reporting and Listing Decisions* (Aug. 2015), https://www.epa.gov/sites/production/files/2015-10/documents/2016-ir-memo-and-cover-memo-8_13_2015.pdf.

[98] *Id.*

achieve and demonstrate environmental results over time."[99] Thus, we urge DWR to use the 303(d) process to prioritize setting TMDLs for this waterway, and to treat the 303(d) and NPDES permitting program as complementary, consistent with EPA guidance.

Fortunately, DWR is in the midst of a permit renewal process that could begin to redress years of oversight. Yet rather than capitalize on this opportunity to improve conditions in the Pigeon River, DWR's draft permit seems poised to allow significant regression. Among other fundamental flaws, DWR's draft permit relies on the Canton Mill's Balanced, Indigenous Population ("BIP") study,[100] which itself is outdated and contains self-serving conclusions contradicting its own data. And by relaxing, rather than tightening, current discharge limits, DWR indicates that it is not seeking to address the water quality problems identified during either the NPDES permitting or the 303(d) listing procedures.

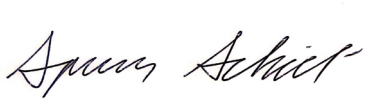
For example, the BIP study that DWR relies on for its draft permit shows that benthos are negatively impacted by effluent from the mill. Specifically, the BIP's findings indicate pollution-tolerant macroinvertebrates are common below the discharge, while pollution-intolerant species are found above it. Yet the BIP claims, and DWR accepts, that the downstream sites are reasonably "similar to what would have been there without the thermal discharge" and other sources of pollution.[101]

MountainTrue and the French Broad Riverkeeper will comment on the draft permit's shortcomings in more detail during the NPDES permit process. We note this here to highlight the importance of protecting the Pigeon River in light of the newly impaired portion, and to emphasize EPA's exhortation to use the 303(d) and NPDES processes and any data gathered therefrom to improve the accuracy and efficiency of all water quality programs in the State.

VI. Conclusion

We appreciate the opportunity to comment on the 303(d) list and urge DWR to reconsider the methodologies and delisting proposals above. Please do not hesitate to contact us with questions regarding these comments. Thank you for your consideration.

Sincerely,



Spencer Scheidt
Associate Attorney

[99] *Id.*

[100] J. Larry Wilson, Charles C. Coutant, & John Tyner, *Canton Mill Balanced and Indigenous Species Study for the Pigeon River (Clean Water Act Section 316(a) Demonstration)* at 32 (2014).

[101] *Id.* at 94.

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Attachment – SELC's Comments on North Carolina's Draft 2018 §303(d) List

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January 18, 2019

Via First Class U.S. Mail and electronic mail

Cam McNutt
N.C. Department of Environmental Quality
Division of Water Resources
1617 Mail Service Center
Raleigh, NC 27699-1167
TMDL303dComments@ncdenr.gov

Re: Updated comments - North Carolina's Draft 2018 §303(d) List

Dear Mr. McNutt:

On behalf of MountainTrue, the French Broad Riverkeeper, the Green Riverkeeper, the Broad River Alliance, and the Catawba Riverkeeper, we are submitting comments on North Carolina's draft 2018 §303(d) list of impaired waters. The proper identification of impaired waters is essential to improving the quality, and preserving the best use, of the State's waters. Accurately identifying waterbodies where water quality standards are not attained also enables the State to prioritize its limited resources for remediating impaired waters. Once waters are identified as impaired pursuant to Section 303(d), the Clean Water Act requires the state to establish a total maximum daily load (TMDL) to limit the presence of the pollutant or pollutants that cause the impairment.[1]

SELC has previously commented on the methodology used by DWR in recent years in evaluating whether impaired waters should remain on the state's list of impaired waters.[2] We continue to have concerns with DWR's approach to removing rivers and streams where water quality violations continue or the underlying impairment has not been addressed. These comments focus on particular waterbody segments.

In contrast to situations where water quality has improved in response to remedial action or imposition of a TMDL, here, the delistings stem from errors in delisting approach and gaps in

[1] 33 U.S.C. § 1313(d)(1)(C).

[2] *See* Comments from SELC to DEQ North Carolina's Draft 2016 §303(d) List (Mar. 29, 2016), available at https://files.nc.gov/ncdeq/Water%20Quality/Planning/TMDL/303d/2016/Comments%20Received.pdf; *see also* Comments from SELC to DEQ re "North Carolina's Draft 2014 §303(d) List" (Mar. 14, 2014), available at https://files.nc.gov/ncdeq/Water%20Quality/Planning/TMDL/303d/2014/Combined%20Comments%203.17.14.pdf.

ambient data monitoring that DWR uses to make listing decisions. Because DWR has not demonstrated that the original environmental circumstances that led to the listing of these waterbodies have changed, these impaired segments must remain on the State's 303(d) list. In addition, we suggest new additions to the draft 2018 §303(d) list based on observations and sampling, including DEQ's own enforcement activities, that confirm degradation of other stream segments in our region.

A. The Following Segments Should Not Be Removed From the Impaired List

Segments of the following waterbodies are on the State's 2016 list of impaired waters, as approved by EPA,[3] and are now proposed for delisting in the State's 2018 list of impaired waters: the North Toe River; the French Broad River; the Nolichucky River; and Irwin Creek. In each instance, the delisting proposal is unsupported by data warranting removal of the relevant river segments from the State's list of impaired waters.[4]

(1) North Toe River 7-2-(21.5) and (27.7) – Turbidity

Both segments of the North Toe River listed for turbidity are downstream of industrial activities that discharge waste from quartz mining and processing in the region.[5] The lower segment, from Grassy Creek to South Toe River (27.7), has been listed since at least 2006, and the upper segment, from a point 0.2 miles upstream of Pyatt Creek to a point 0.5 miles upstream of U.S. Hwy. 19E, has been listed since at least 2008.[6] There is no TMDL in place on the North Toe to address persistent turbidity problems.

In the 2018 draft, DWR proposes to remove both segments from impairment (category 5) and re-categorize them under 3a, an indication that data to determine attainment status is unavailable. In both instances, DWR's ambient data is available and indicates both segments have exceeded turbidity standards in the five-year window DWR considers relevant. Although exceedances persist, DWR's application of its delisting procedure leads the agency to conclude, in error, these segments can be removed from the 303(d) list.

EPA has already rejected the agency's approach. As recently as 2016, DWR attempted to remove the upper portion of the North Toe River from the 303(d) list, under the assumption that the turbidity exceedances in ambient data did not meet its listing criteria of 10 percent exceedance with a 90 percent level of confidence. EPA noted, in applying this statistical method

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[3] *See* EPA's Partial Approval of the State of North Carolina's 2016 303(d) List Submittal (Dec. 8, 2016), at https://files.nc.gov/ncdeq/Water%20Quality/Planning/TMDL/303d/2016/NC2016_303dDecisionPackage20161208%20%28003%29.pdf.

[4] *See* 40 C.F.R. § 130.7(b)(6)(iv) (The State must "demonstrate good cause for not including a water or waters on the list.")

[5] *See, e.g.*, NPDES Permit No. NC0000353, NPDES Permit No. 0000400, NPDES Permit No. 0000175, NPDES Permit No.0000361, NPDES Permit No.0084620. Each of the industrial discharge permits recognize total suspended solids as sources of pollution.

[6] *See* https://files.nc.gov/ncdeq/Water%20Quality/Planning/TMDL/303d/2014/2014_303dlist.pdf.

to *delistings* (as opposed to listings), that for the North Toe River, a maximum of three exceedances would be allowed out of 55 sampling events, if the state appropriately adhered to its 90 percent confidence method.[7] Because the number of exceedances for turbidity in the North Toe River exceeded the maximum allowable exceedances level of three out of 55 events, EPA added the North Toe River segment back to the final, approved list, based on "failure to demonstrate good cause to delist." Appx. C – EPA's North Carolina 2016 303(d) List Decision Document (Att. A); *see also* 40 C.F.R. § 130.7(b)(6)(iv) (requiring a demonstration of "good cause for not including a water or waters on the list").

Here again, the sample size for both segments of the North Toe River is 55 events. In both instances, the agency's own data indicates the number of exceedances is greater than 3 events – the maximum allowable to adhere to a 90 percent confidence level for delisting (which EPA found acceptable). *See* Appx. C – EPA's North Carolina 2016 303(d) List Decision Document, "The EPA's Analysis of the State's Use of Nonparametric Procedure for Delisting" (Att. A). Between 2012 and 2016, DWR's ambient monitoring recorded five violations of turbidity for the upper segment and four violations for the lower segment. In both instances, the number of recorded exceedances is again greater than the allowable limit that would satisfy good cause for delisting. Both segments must remain on the impaired list.

To the extent DWR relies on an Environmental Management Commission ("EMC") policy[8] for delistings with only 40 percent confidence, we note this is at odds with EPA's prior finding on application of statistical confidence levels for listings and delistings. Even if that were not the case, the report the EMC relies upon for its recent delisting policy would require 90 percent confidence: authors observe "any statistical conclusion that has a confidence level of less than 90% is considered not acceptable by most statistics practitioners."[9]

In addition, additional water quality data collected by the French Broad Riverkeeper confirms the North Toe River, in reality, remains impaired for turbidity.[10] Submitted with these comments is a table of sampling for turbidity in multiple locations between upstream of Grassy Creek (the upstream location of impairment) and Penland Bridge (the ambient monitoring station) in the North Toe River from 2015–2018. Att. B. On three dates within the window DWR views as relevant to the draft 2018 list, over ten instream exceedances were measured in

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[7] The calculation stems from correct application of a delisting procedure, which reverses the null hypothesis and results in a delisting procedure that ensures 90 percent confidence for delisting, consistent with that supported by EPA, as described in the attached Appx. C – EPA's N.C. 2016 303(d) List Decision Document (Att. A).

[8] *E.g.*, 2018 303(d) Listing and Delisting Methodology (Mar. 8, 2018), *at* https://files.nc.gov/ncdeq/Water%20Quality/Planning/TMDL/303d/2018/2018%20Listing%20Methodology_ApprovedMarch2018.pdf.

[9] Pi-Erh Lin et al., *A Nonparametric Procedure for Listing and Delisting Impaired Waters Based on Criterion Exceedances* 16 (2000).

[10] In evaluating "all existing and readily available water-quality related data," federal regulations require states to consider, at a minimum: "Waters for which water quality problems have been reported by … members of the public …. These organizations and groups should be actively solicited for research they may be conducting or reporting." 40 C.F.R. § 130.7.

the North Toe River in proximity to the lower stream segment, ranging from 23.4 NTU to 955 NTU – including two samples that were too high to register on a turbidometer. Many exceedances recorded by the French Broad Riverkeeper far exceeded the State's own ambient monitoring data.

This points to another problem: the State's failure to collect ambient data when impairment is occurring for a parameter like turbidity. The State's own ambient data for the North Toe River illustrates the problem. Ambient data for turbidity is collected by grab sample on a monthly basis, under the state's QAPP.[11] "Bad weather" is listed among reasons to delay sampling. *Id.* Through 2014, DWR reported data about precipitation in the previous 24 hours in the North Toe River. During that period, every reported exceedance of the turbidity standard occurred following a rain event.[12] But the State only gathered data following such a rain event about 20 percent of the time. The "monthly" sampling itself is also highly variable – occurring anywhere from 12 days to 2.5 months apart.[13] An ambient monitoring program at subjective intervals and under conditions that avoid "bad weather," in a region relatively prone to rainfall, is likely to under-record exceedances for pollutants like turbidity, which typically intensifies following rainfall that causes increased sediment discharges.

The French Broad Riverkeeper's monitoring confirms, on the other hand, that exceedances in the North Toe River are not only ongoing, but extreme. The doubt is not in whether the river is impaired, but in any monitoring protocol that leads to the contrary conclusion. DWR must keep the North Toe River on the impaired list of waters until it can demonstrate with defensible data that the river is not impaired. If the North Toe River is not impaired for turbidity, it is unclear what waterbody would be.

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[11] DEQ, DWR, Ambient Monitoring System (AMS) Program Quality Assurance Project Plan § 2.1.3 (Feb. 2017) https://files.nc.gov/ncdeq/Water%20Quality/Environmental%20Sciences/ECO/AMS%20QAPP/2017%20AMS%20QAPP%20Master%20Updated%20Final%20With%20Appendices.pdf.

[12] *See* data available at https://files nc.gov/ncdeq/Water%20Quality/Planning/TMDL/303d/2018/2018_IR_Data.zip.

[13] For example, DEQ sampled on Mar. 1, 2012, and again on Mar. 13, 2012; in contrast DEQ sampled on Dec. 11, 2013, and not again until Feb. 25, 2014.

September 29, 2015 – North Toe River, just below mouth of Little Bear Creek

And the excursions of State water quality criteria are not just numeric. Attached with the data are photos of the North Toe River during sampling and a statement describing conditions in September 2015. *See* Photographs and Statement of S. Evans (Att. C and D). The river is not just turbid, but an unnatural chalky white color – almost certainly attributable to mining waste in the river. Deposits have piled up in places at the river's edge, and the river had a caustic, chemical odor to paddlers. *See id.* These conditions, at a minimum, also violate 2B.0211 (12) (odor and deleterious substances).

(2) North Toe River 7-2-(21.5) – Copper

Segment 7-2-(21.5) of the North Toe River is listed under category 5e[14] as impaired for copper on the State's 2016 impaired list of waters, and has remained on the list since 2008. DWR proposes to move this segment to category 3a, based on a finding that data is insufficient to determine attainment status. Again, DWR's data does not support delisting this segment of the North Toe for copper. DWR's ambient monitoring data includes only nine monitoring events for dissolved copper, in 2015 and 2016.

EPA has rejected once already DWR's prior attempt to remove this segment of the North Toe River from the list of impaired waters for copper, based upon insufficient data.[15] In 2012,

[14] 5e means the segment has been added to the State's list of impaired waters by EPA. *See* 2018 Integrated Report Category Assignment Procedure, North Carolina, https://files.nc.gov/ncdeq/Water%20Quality/Planning/IR-Assessment-Process-2018.pdf.

[15] In the 2012 cycle, DWR proposed to remove the North Toe River from the impaired list of waters for copper based on a 9.5 percent exceedance frequency. The EPA's independent assessment determined that the state had failed to adequately demonstrate good cause for delisting. *See* EPA's Partial Approval of the State's 2014 303(d) List Submittal (July 31, 2014), and Appx. C, "Responsiveness Summary to Comments Regarding the EPA's August 16, 2012 Action to Add a Water to North Carolina's 2012 Section 303(d) List," at

EPA warned against relying on small samples sizes, which "can leave a truly impaired water off the list." Responsiveness Summary to Comments Regarding the EPA's August 16, 2012 Action to Add a Water to North Carolina's 2012 Section 303(d) List (Att. E). For toxics, like copper, EPA warned an excursion should not exceed a one-in-three-year frequency criteria. *See id.* In conducting an "independent assessment" of attainment of water quality in the North Toe, EPA stated the relevant data included "all existing and readily available water quality-related data." *See id.* at 2; *see also* 40 C.F.R. § 130.7(b)(5) (requiring states to assemble and evaluate all existing and readily available water quality-related data). With no data in the 2012 attainment window (because DWR had suspended monitoring for metals in 2007), EPA then relied on earlier data in determining the North Toe must remain on the impaired list for copper. In 2014, EPA *again* added the North Toe River back to the impaired list of waters when the state *again* tried to remove it, because in reviewing all of the available data, EPA determined one exceedance in three years precluded its removal. *See* EPA's Partial Approval of the State's 2014 303(d) List Submittal (July 31, 2014).

Here, DWR apparently relies on only the most recent sampling for dissolved copper, which is nine sampling events that occurred in the space of less than a year (from September 2015 to July 2016),[16] to propose to remove the North Toe from the impaired list. This small sample set cannot provide good cause to support delisting from category 5. In 2016, EPA made abundantly clear that a minimum of 22 samples with no exceedances would be required to remove impaired waters from the 303(d) list, based on the state's 10 percent exceedance rate and 90 percent confidence rate for listings (appropriately applying the same methodology in reverse to delistings). Att. A. EPA added seven impaired waters back to the State's list based on inadequate sample size for delisting – including this same segment of the North Toe River, but for turbidity. *See* Att E.

EPA also made clear that category 3, for waterbodies with insufficient data, is not where the State places impaired waters that it lacks sufficient data to delist. In other words, insufficient data alone is not "good cause" for delisting. As EPA explained previously, "While Integrated Reporting Category 3 is meant for those waters where there are insufficient available data and information to make a use attainment determination, the 'EPA also expects that waters identified as impaired in the previous reporting cycle will not be placed in Category 3 in the subsequent listing cycle unless the State can demonstrate good cause for doing so.'" Att. E. Here, the State recognizes its data is "insufficient" for its determination; based on that alone, the North Toe River should not be removed from the impaired list for copper.

Finally, sampling for copper from 2015 to 2016 – reported alongside dissolved copper – shows an exceedance of the prior water quality standard (7 ug/L)[17] occurred on Feb. 3, 2016,

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https://files.nc.gov/ncdeq/Water%20Quality/Planning/TMDL/303d/2014/NC_2014%20303%28d%29_finalDecisionDocument_07%2031%202014.pdf .

[16] *See* data on sampling for metals available here: https://files.nc.gov/ncdeq/Water%20Quality/Planning/TMDL/303d/2018/2018_IR_Data.zip.

[17] DEQ's assessment fact sheet for the North Toe references the 7 ug/L standard for category 5 impairment that was in place before North Carolina adopted the dissolved metals standard.

sampling that detected 11 ug/L. This confirms, as a practical matter, that elevated copper has been detected in the North Toe, even in recent data.

(3) Nolichucky – Copper

In 2014, the EPA added the Nolichucky to North Carolina's 303(d) list, based upon an independent assessment that the Nolichucky exceeded the one-in-three criteria for toxics with copper of the then-applicable standard of 7 µg/L. Now, DWR proposes to remove the Nolichucky from category 5e, indicating it was added by EPA, to 3z1. As an initial matter, category 3z1 under State policy is used "when data are not assessed using an NC water quality standard."[18] At the same time, DWR proposes to place the Nolichucky in category 1 (attaining standards) for the revised dissolved copper standard.

DWR again relies upon an inadequate sampling size, under EPA's prior analysis, to remove the Nolichucky from the list of impaired waters for copper. Ambient data posted by DWR lists only nine sampling events occurring between August 2015 and July 2016. For the reasons stated above, this limited sampling is too small of a sample size to support removing the Nolichucky from the impaired list, and to the extent DWR believes the data[19] is insufficient to determine attainment, that too warrants leaving the Nolichucky on the impaired list for copper.

(4) French Broad River 6-(54.75)b– Fecal Coliform

The French Broad River, from Mud Creek to Highway 146, is listed as impaired for fecal coliform. As a Class B water, this segment of the French Broad River is classified for primary recreation, including "swimming" and "outdoor bathing." 15A N.C.A.C. 2B .0219 (3)(b) (Class B). Among other things, the segment of the French Broad must meet limits on fecal coliform, which includes requirements: "not to exceed geometric mean of 200/100 ml (MF count) based on at least five consecutive samples examined during any 30-day period and not to exceed 400/100 ml in more than 20 percent of the samples examined during such period." *Id.*

In the 2016 listing cycle, this segment of the French Broad exceeded the "5 in 30" criteria, resulting in listing on the impaired list under category 5. For 2018, DWR proposes to remove the segment from the 303(d) list and re-assign it to category 1, meeting criteria. However, it appears DWR did not repeat the "5 in 30" monitoring that warranted listing in the first place, to support delisting.[20]

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[18] *See* 2018 Integrated Report Category Assignment Procedure, North Carolina, available at https://files.nc.gov/ncdeq/Water%20Quality/Planning/IR-Assessment-Process-2018.pdf.

[19] The available data appears to include both conventional sampling and sampling for dissolved metals.

[20] EMC's recently adopted delisting policy for fecal coliform appears to embrace this approach, creating an off-ramp for waters impaired under the "5-in-30" fecal coliform criteria in the absence of data that would show attainment with that standard. The effect is a paper exercise to allow delisting of waters that may be continuing to violate the fecal coliform standard. *See* https://files.nc.gov/ncdeq/Water%20Quality/Planning/TMDL/303d/2018/2018%20Listing%20Methodology_ApprovedMarch2018.pdf.

Apparently this is because DWR only collects samples once or twice each month under its ambient monitoring protocol.[21] As DWR itself has suggested, the current ambient monitoring system sampling regime is "not appropriate for determining exceedance of the ["5 in 30"] standard."[22] As EPA observed in 2016, "[t]his means that the data typically collected is not directly used to assess against the water quality standard."[23]

Here, however, this segment is already listed for violating the "5 in 30" standard; even if the limited periodic ambient data actually collected has met the fecal coliform standard, that does not, alone, support removing it from the impaired list for the requirement actually violated.

Furthermore, the proposed delisting of the French Broad segment, without testing to demonstrate attainment with the exceeded standard, underscores that DWR should revisit the way it evaluates bacteria data when assessing recreational use support. Given the foregoing limitations in the agency's ambient monitoring approach in freshwaters, the 303(d) list may fail to include waters, especially inland, where bacteria levels threaten recreational use.

Finally, data from the French Broad Riverkeeper indicates this portion of the river is not complying with fecal coliform standards. Since 2012 volunteers in summer months have sampled the French Broad for the presence of E. coli at Westfeldt Park, just downstream of the confluence of Mud Creek with the French Broad. In every year, data indicates exceedances of EPA's recommended safe level for E. coli of 235 E. coli colonies per 100 milliliters of water at least 12% of the time. And the problem appears to be getting worse.[24] In 2018, samples failed to meet EPA's recommended safe level 40% of the time. DWR should be looking for ways to solve this problem, not sweep it under the run through delisting.

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[21] DEQ, DWR, Ambient Monitoring System (AMS) Program Quality Assurance Project Plan § 2.1.2 (Feb. 2017).

[22] DEQ, DWR, Ambient Monitoring System (AMS) Program Quality Assurance Project Plan § 1.6.6.2 (Feb. 2017).

[23] EPA's Partial Approval of the State of North Carolina's 2016 303(d) List Submittal (Dec. 8, 2016), at 29, available at https://files.nc.gov/ncdeq/Water%20Quality/Planning/TMDL/303d/2016/NC2016_303dDecisionPackage20161208%20%28003%29.pdf.

[24] A summary of the E. coli data for this segment is available at https://www.theswimguide.org/beach/4340. We can provide monitoring results upon request.

(5) Irwin Creek 11-137-1– Lead, Zinc, Copper

Irwin Creek has a long and unfortunate history of contamination. The creek has been on North Carolina's 303(d) list in some capacity for over 20 years[25] and it is subject to at least one TMDL, for fecal coliform.[26]

In some ways its contamination is not surprising. It has the most industrial watershed in Mecklenburg County, with over 18% of land zoned for industrial uses.[27] At least one organization has characterized it as "one of the most polluted creeks in the state, partly because of factories." *Id*. When commenting on contamination in the creek in 2015, DWR staff identified another source of contamination, citing the fact that the creek is "probably underneath a hundred roads."[28] Troublingly, staff then expressed that "it doesn't seem like you can do much" for the creek and DWR has now proposed to delist it. *Id.*

In 2016, DWR also sought to delist Irwin Creek for lead and zinc but EPA added it back to the list "[b]ased on failure to provide a reasonable method to assess toxic pollutants." *See* App. B to N.C. 2016 303(d) List Decision Document.[29] Like the North Toe, DWR's data still does not support delisting this segment for those pollutants. DWR proposes to relist this segment as category 3a indicating DWR has not collected the required number of samples. Without sufficient data there is no justification to remove this stream from category 5.

DWR also plans to delist this segment for copper and relist it under category "3z2." However, there does not appear to be a "3z2" category. [30] Regardless, DWR has not taken the requisite number of samples to justify delisting at a 90% confidence interval, and the samples taken include exceedances of the copper standard. Delisting this segment for copper, lead, and zinc is not justified.

B. DWR Should Evaluate the Following Waterbodies for Listing

The proper identification of impaired waters is essential to improving the quality, and preserving the best use, of the State's waters. Based on impacts, and data that may be available

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[25] *See* 1998 303(d) List at https://files.nc.gov/ncdeq/Water%20Quality/Planning/TMDL/303d/1998%20303d%20list.pdf.

[26] *See* https://files.nc.gov/ncdeq/Water%20Quality/Planning/TMDL/FINAL%20TMDLS/Catawba/MCDEPfecalTMDLfinal.pdf.

[27] *See* https://keepingwatch.org/wp-content/uploads/creeks-brochures/Brochure-Individual-Irwin.pdf.

[28] *See* https://keepingwatch.org/programming/creeks/irwin-creek.

[29] *See* https://files.nc.gov/ncdeq/Water%20Quality/Planning/TMDL/303d/2016/NC2016_303dDecisionPackage20161208%20%28003%29.pdf

[30] *See supra* note 18.

in the files of other divisions, DWR should evaluate listing White Oak Creek and Little Bear Creek for turbidity under Section 303(d).

(1) White Oak Creek 9-29-46

White Oak Creek is a Class C water located in the Broad River Basin, index number 9-29-46. DWR's 2018 integrated report lists White Oak Creek as category 1, meeting criteria, for fish communities and benthos.

As early as 2008, however, agency biologists identified sediment as a concern for the White Oak Creek watershed.[31] Since 2014, DWR records show, the creek and associated unnamed tributaries have been heavily impacted due to construction activities for the Tryon International Equestrian Center ("TIEC"). The earliest Notice of Violation ("NOV") for the site posted to the Division of Water Quality's Laserfiche online repository is NOV-2014-PC-0168, from an inspection report conducted on July 29, 2014, which documented upwards of 24 inches of sediment deposits in multiple stream reaches, violating water quality standards prohibiting "[o]ils, deleterious substances, colored or other wastes: only such amounts as shall not render the waters injurious to public health, secondary recreation or to aquatic life and wildlife or adversely affect the palatability of fish, aesthetic quality or impair the waters for any designated uses" (now codified at 15A N.C.A.C. 2B.0211 (12)). TIEC continued to be chronically in violation after 2014. N.C. DWR staff issued two NOVs in 2015, NOV-2015-PC-0229 and NOV-2015-PC-230, the first of which issued violations for deposited sediment up to 8 inches in stream reaches and the second with sediment deposits in associated stream reaches in excess of 24 inches. In 2016 one NOV was issued, NOV-216-PC-0306, violating water quality standards with sediment deposits up to 11 inches. TIEC continues to create conditions leading to violations of water quality standards in White Oak Creek and the associated unnamed tributaries, with additional violations in 2018 resulting in assessed civil penalties of $64,437.

In addition to considering its inclusion on the current draft 303(d) list, DWR should ensure monitoring occurs for relevant parameters like turbidity to evaluate the stream's status for future 303(d) listing cycles. Recent data collected by the Green Riverkeeper confirms multiple exceedances for turbidity in White Oak Creek, including exceedances as high as 999 NTU in September 2018. *See* Summary of White Oak Creek monitoring, Att. F.

(2) Little Bear Creek 7-2-45b

Little Bear Creek (Class C, Tr) is a tributary to the North Toe River that runs alongside mining facilities near Spruce Pine, in the French Broad River Basin. Its confluence with the North Toe is upstream of the ambient monitoring station for 7-2-(27.7). DWR's assessment report for Little Bear Creek lists only one criteria for assessment, benthos, for which the data is "inconclusive" because the stream has not been rated. Ambient monitoring data does not appear to be collected by the state for Little Bear Creek. Recent data collected by the French Broad

[31] *See* https://files.nc.gov/ncdeq/Water%20Quality/Planning/BPU/BPU/Broad/Broad%20Basin%20Plans/2008%20Plan/Green%20River.pdf.

Riverkeeper, however, confirms multiple exceedances for turbidity in Little Bear Creek, including 721 NTU in 2015, and 755 NTU in 2016. *See* Att B. Photographs also confirm mine tailing deposits are visible on the bank where Little Bear Creek joins the North Toe River. Therefore, in addition to considering its inclusion on the current draft 303(d) list, DWR should ensure monitoring occurs for relevant parameters like turbidity to evaluate the stream's status for future 303(d) listing cycles.

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C. Conclusion

We appreciate the opportunity to comment on the 303(d) list and urge DWR to reconsider the listing proposals above. Please do not hesitate to contact us with questions regarding concerns raised or data provided with these comments. Thank you for your consideration.

Sincerely,

Amelia Burnette
Senior Attorney
Southern Environmental Law Center

cc (via email):
Marion Hopkins, EPA Region 4 (hopkins.marion@epa.gov)

DWR Responses to SELC's comments are provided by comment section below:

I. DWR's Listing and Delisting Methodology Remains Statistically Unsound and Scientifically Indefensible.

A. **DWR's delisting methodology allows waters to be removed from the 303(d) list with less statistical confidence than it required to list them.**

DWR Response: *DWR provided extensive response to comments to address these concerns in the 2018 Response to Comments, beginning on page 69. The EPA also addressed the delistings process in their approval of the 2018 303(d) list, page 11. It should be noted that most of the delistings proposed for 2020 are tagged for additional focus in basin plans for any recommendations of follow up action.*

It should also be noted that there is no reference to the Lin et al paper in the 2020 303(d) Listing and Delisting Methodology as it is not applicable to the State's process. The State's process applies a multi-step evaluation that includes a focus on newer data and balancing decision making for both listing and delisting decisions.

Regarding the site specific information provided for the Cane River, this information will be shared with the basin planners for evaluation in the next update of the basin plan for any site specific recommendations for follow-up actions.

DWR looks forward to meeting with SELC to discuss concerns and ensure understanding of the decision making process for listing and delisting actions.

B. **DWR also removes waters impaired with pathogens from the 303(d) list with less statistical confidence than it required to list them.**

DWR Response: *DWR discussed the process for pathogen delistings in the 2018 Response to Comments. For 2020, North Carolina did not propose any delistings of freshwaters impaired for fecal coliform. The State continues to evaluate how best to sample and assess pathogen indicators in freshwaters and will include EPA in those discussions.*

C. **DWR cannot apply its "one-size-fits-all" statistical approach to the listing of toxic pollutants.**

DWR Response: *DWR provided extensive response to comments to address these concerns in the 2018 Response to Comments. DWR continues to work towards development of an assessment approach for toxics that addresses both EMC and EPA concerns.*

II. North Carolina's 303(d) List Ignores Trout Waters Temperature Exceedances.

DWR Response: *The temperature standard as written in 15A NCAC 02B .0211 is as follows:*

Temperature: not to exceed 2.8 degrees C (5.04 degrees F) above the natural water temperature, and in no case to exceed 29 degrees C (84.2 degrees F) for mountain and upper piedmont waters and 32 degrees C (89.6 degrees F) for lower piedmont and coastal plain Waters; the temperature for trout waters shall not be increased by more than 0.5 degrees C (0.9 degrees F) due to the discharge of heated liquids, but in no case to exceed 20 degrees C (68 degrees F);.

We have forwarded this comment to the DWR Classification, Standards, and Rules Review Branch (CSRRB) as this is essentially a comment on the need for clarification of the standard itself and should be directed towards the public review of the standards through the Triennial Review process. The CSRRB has confirmed that the assessment methodology represents a correct application of the standard as it was originally intended. The language in the standard related to trout waters (the temperature for trout waters shall not be increased by more than 0.5 degrees C (0.9 degrees F) due to the discharge of heated liquids, but in no case to exceed 20 degrees C (68 degrees F);) applies in its entirety to the evaluation of heated discharges.

Should the Triennial Review result in changes to the temperature standard, DWR will propose changes to the subsequent 303(d) Listing and Delisting Methodology for EMC consideration.

III. DWR Must Collect Data at Times and Locations that Reveal the Full Extent of Pollution.

A. DWR avoids collecting turbidity data during weather events that increase turbidity.

DWR Response: *DWR's first priority is the safety of our staff, thus during inclement weather event, we leave it up to the Regional Office staff to decide if their sites are safe to sample. This safety concern can also stretch past the weather event if conditions are considered unsafe (i.e., flooding of roads and bridges). Other than considering safety, AMS monitors do not actively avoid or prioritize post-storm sampling. The focus is on sampling as many active stations as possible each month with limited time and staffing resources.*

B. Monitoring locations avoid some of the most polluted areas.

DWR Response:
The AMS program has evolved due to the institution of the NPDES permitting program in the late 1970's and its self-monitoring requirements, much of this oversight became redundant. Though some of these historic stations are still active and are useful for monitoring discharges that continue to have compliance issues, in more recent years, attention has been shifted towards monitoring the effects of non-point sources of pollutants and representing the overall condition of watersheds.

The AMS program has been criticized in the past for focusing on problem areas & not documenting small streams or overall conditions of waters of the state. So again, the AMS program continues to develop its monitoring design to gather data of the overall conditions of NC's watersheds.

Any known pollution source should be dealt with by the Regional Office through compliance protocols.

Regarding the First Broad River concern, the turbidity listing is based on a station that is in the lower end of a 14.6 mile AU (Station A640000). This AU has not been split. This AU has been listed and delisted for turbidity over many cycles, which is not atypical for waters where turbidity levels remain close to the standard. Observations of imagery appear to indicate no difference in turbidity above and below the dam. DWR has noted this for turbidity around other small hydroelectric dams that do not pool a large area of water upstream of the dam and there is little settling in the backwater. Benthic ratings at the site have improved from Good-Fair and Fair in the 1980's to Good and Excellent in 2010 and 2015. Due to COVID19, the Broad basin was not sampled for benthos in 2020. DWR will evaluate splitting the dam into an upstream AU from the AMS station for 2022.

IV. DWR Must Use All Available Data to Inform the 303(d) List

The only third party to submit data for 2020 assessment was Charlotte Mecklenburg Stormwater. Riverkeepers did not submit any data for consideration. DWR will continue to work with third parties interested in submitting data to ensure the proper submittal process is followed. DWR will also continue to update guidance on third party data submittal as more third parties express interest in sharing data.

DWR has a process in place to use data for Integrated Report decisions collected under a state approved QAPP, there is no qualification process. DWR works with data submitters ahead of time to ensure accountability and understand expectations of data use as regards to the Integrated Report. In order to maintain consistency with assessment, DWR requires submittal of raw data as well as summarized data through a DWR submittal template.

V. DWR Must Address the Pigeon River Impairment During Both the 303(d) Listing and the NPDES Permitting Procedures.

DWR Response: *This is not a comment on a 303(d) listing decision. DWR will share this comment with the DWR NPDES Permitting Branch.*