**Question 1 – What is the basis of North Carolina's chlorophyll-a standard, and how does it compare to other States?**

- Falls Lake water quality impairment decisions and the Falls Lake rules are based on the non-attainment of the chlorophyll-a standard. NC first adopted a chlorophyll water quality standard in 1979 (~40 years ago). NC and SC both have a 40 µg/L chlorophyll-a standard. However, NC considers waters impaired if the chlorophyll-a standard is exceeded in more than 10% of the samples. South Carolina considers waters impaired when the chlorophyll-a standard is exceeded in more than 25% of samples. This is a significant difference.
- Most states have a narrative standard for eutrophication concerns. Narrative standards evaluate impairment based on observable, negative impacts to the designated uses of a lake such as aquatic life, swimming, water supply, and recreation.

**Question 2 – How is NC's standard different than other States that have a numeric criterion?**

- Other states that have numeric standards for chlorophyll-a typically have specific applications such as growing season averages that are evaluated at specific locations within the lake. For example, locations identified near a dam, at a water supply intake, or at a certain bridge crossing are typical. Most other states with a chlorophyll-a water quality standard incorporate a duration, frequency, central tendency of magnitude, or specific conditions that provide for an allowable exceedance of the standard under certain circumstances.

**Question 3 – How is chlorophyll-a related to the designated uses of Falls Lake – swimming, drinking water, aquatic life, and recreation?**

- Quantifiable linkages between chlorophyll and designated uses are very difficult to define. Chlorophyll is an indicator of fertility and not necessarily a reliable indicator of problems. For example, you can have drinking water taste and odor problems even when chlorophyll-a levels are well below 40 µg/L. Alternatively, you may not have any taste and odor problems when chlorophyll-a is well above 40 µg/L. The same example may apply to toxic algae episodes, and not all algae are toxic. It is not the chlorophyll levels that are associated with toxicity but rather particular species of algae that may be triggered under certain conditions to produce toxins.

**Question 4 – Did the UNC Collaboratory Report on Jordan Lake suggest that NC should reevaluate the chlorophyll-a standard with an emphasis on the standards being site- specific and seasonal?**

- The Jordan Lake UNC Collaboratory Report did suggest the need for NC to re-evaluate its water quality standard for chlorophyll-a as follows:

> **UNC Collaboratory Jordan Lake Final Report December 2019**
>
> "The state's longstanding broad nutrient sensitive waters criterion (an instantaneous chlorophyll-a standard of 40 µg/l applied everywhere) should be reevaluated. For the past few years scientists have been reviewing this issue as part of the work of the Nutrient Criteria Development Plan Science Advisory Council. The Department of Environmental Quality should continue to engage in and encourage discussions related to development of new standards with an emphasis on the standards being site-specific and seasonal."

**Question 5 - How long will it take to complete the effort on water quality modeling, and what are some of the example scenarios that will be evaluated?**

- The UNRBA Watershed and Lake Models are scheduled to be completed by 2022. The models will allow evaluation of many different scenarios, but realistically, we want to focus on the lake's response to different levels of nutrient management in the watershed. We also want to understand how things that we cannot control, like very large storm events, affect nutrient loading and the growth of algae in the lake. We can test scenarios like best available technologies, and we can also test extreme conditions like if the watershed was completely undeveloped. Primarily we will evaluate the response of the lake to varying levels of investment resulting in non-point and point source reductions.

**Question 6 - Is the State providing any resources to the UNRBA in working on these issues? What can our legislators do to support this effort?**

- The UNRBA worked cooperatively with DWR to provide some additional data from within the lake. DWR's data is the main source of lake quality and represents the measurements we will be using in calibration and confirmation of the lake models.
- DWR is fully engaged with the efforts of the UNRBA. DWR is consistently present at our committee meetings and Board meetings. DWR has also helped the UNRBA secure funding grants like the development of new nutrient reduction credits for practices including the elimination of illicit discharges and soil improvement. Currently DWR is working with the UNRBA to obtain a grant to fund revisions to the watershed model code for nutrient loading from different types of onsite wastewater treatment systems.
- The NC General Assembly supported a Session Law to assist with revising the compliance schedule for Stage I and delayed the implementation of Stage II prior to the revision of the Falls Lake Rules. DWR delayed requirements for compliance with parts of the Falls Lake Nutrient Management Strategy to coincide with the Session Law.

**Question 7 - It seems that the UNRBA is making good progress on the re-examination, is there any problem with the Raleigh water supply?**

- The majority of the drinking water in Raleigh comes from Falls Lake and is treated at the E.M. Johnson Water Treatment Plant. Falls Lake provides raw water that results in a public drinking water supply that meets State and Federal water quality rules. The City of Raleigh provides both annual and monthly drinking water quality reports. Laboratory staff from the City of Raleigh perform an exceptional level of testing to ensure the safety of drinking water. In 2018, staff at the Raleigh laboratory collected, tested and analyzed Raleigh's water between 6,000 and 7,000 times a month.
- Seasonal taste and odor issues that sometimes occur are consistent with other reservoirs and surface water supplies throughout NC. Falls Lake meets its designated drinking water use, and Raleigh is in compliance with all national Primary Drinking Water Regulations.

**Question 8 - What is the real problem? Is water quality in the lake bad? Is it getting worse? Is there an algae problem or is the problem with our water quality assessment tools?**

- Falls Lake was placed on NC's impaired waters list (Section 303(d) under the Federal Clean Water Act) for non-attainment of the water quality standard for chlorophyll-a. This standard requires that chlorophyll-a not exceed 40 µg/l.

- Nutrient loading to Falls Lake has dropped since it was first impounded. However, chlorophyll-a levels can vary due to operation of the dam, sediment nutrient releases and the timing of storm flow periods. Nutrient loading is an important factor, but it is not the only factor that controls chlorophyll-a levels.
- Chlorophyll-a is a measure of algal productivity but is not a measure of algal problems. It is an indicator that algal issues and effects on designated uses should be evaluated, but chlorophyll-a itself is not toxic. Chlorophyll-a is necessary to support the base of the aquatic food web and productive and healthy fisheries in Falls Lake. The challenge for the UNRBA is to strike the right balance in terms of protecting designated uses, supporting a healthy food web, and finding cost-effective solutions to improve water quality.
- NC's current water quality standard for chlorophyll-a is not a reliable measure of functional insults on the designated uses. It is the UNRBA's position that the reservoir needs a site-specific standard that links chlorophyll-a measurements to actual impairment of uses. This is also the approach that the NC Division of Water Resources has taken with the Scientific Advisory Council (SAC) appointed under its Nutrient Criteria Development Plan. The SAC, which, includes representation by EPA Region IV, is recommending an average chlorophyll-a standard as a component of a site-specific criterion for High Rock Lake.

### Question 9 - Why does it take so long to come to an agreement between the local governments and the State of North Carolina on how to best protect Falls Lake?

- There are many parties, or stakeholders, interested in the management of Falls Lake. These groups, and the individuals that make them up, have various views of what needs to be done to properly manage this reservoir. The parties include the local governments, agriculture, agencies, and non-governmental organizations.
- The state agencies such as the Department of Environmental Quality and its Divisions are also stakeholders. These regulatory agencies have public policy, rules, and laws that govern management of water quality in the state.
- All of these interest groups have an impact on the local governments in the watershed. The local governments also have varying views of the level of management needed to protect Falls Lake and the Falls Lake drainage area.
- All of these factors make a stakeholder process complicated, involved, and sometimes difficult. It takes considerable time to work through these potential conflicts.
- The UNRBA is committed to consensus-based decisions whenever possible. In building consensus decisions, the UNRBA seeks to be transparent in our meetings and all of our efforts working towards a successful re-examination of the Falls Lake Rules. Our goal is to develop a cost-effective approach and a sustainable future for all of the Falls Lake designated uses. Consensus takes time, but it is worth the effort. It serves no positive purpose to fail to bring people together and find common ground.