

UNRBA Path Forward Committee Meeting

# Stage I Implementation, MRSW and Monitoring Program Status Updates

March 11, 2019



# Agenda

- Jurisdictional loads and options for Stage I
  - Review rule language
  - Summarize Stage I progress
  - Provide a summary of jurisdictional load meetings
  - Summarized estimated loading increases relative to wastewater treatment reductions already achieved
  - Summarize recent EPA trading guidance
- Provide an overview of the afternoon MRSW topics
- Provide a status update for the UNRBA Monitoring Project
- Review Proposed UNRBA budget for FY 2020
- Reiterate UNRBA comments on 303(d) list

# **Jurisdictional Loads and Options for Stage I**

# Objectives

- Understand the status of compliance with Stage I
- Consider alternative approaches for compliance
- Seek agreement within the UNRBA to develop a unified position on Stage I compliance
- Discuss ways to have a more effective path forward

# Stage I Rule Language / Implementation

- Review language from the Falls Lake Nutrient Management Strategy (the Rules)
- Point out potential issues in the Rules
- Discuss previous and recent guidance from DWR relative to the Rules and implementation
- DWR clarification comments
- Set focus group meeting with DWR to establish implementation process

Falls Nutrient Strategy	
Rules Approved by the RRC on December 16, 2010 <i>Effective Date - January 15, 2011</i>	
Table of Contents	
<u>Falls Rules</u>	<u>Page #</u>
15A NCAC 02B .0275 – Purpose and Scope	1-5
15A NCAC 02B .0276 – Definitions	6-7
15A NCAC 02B .0277 – New Development	8-11
15A NCAC 02B .0278 – Existing Development	12-16
15A NCAC 02B .0279 – Wastewater Discharge	17-22
15A NCAC 02B .0280 – Agriculture	23-28
15A NCAC 02B .0281 – Stormwater for State & Federal Entities	29-37
15A NCAC 02B .0282 – Options for Offsetting Nutrient Loads	38-39
<u>Amended Neuse Rules</u>	<u>Page #</u>
15A NCAC 02B .0235 – Neuse Stormwater Requirements	40-41
15A NCAC 02B .0315 – Neuse River Basin	42-45

<https://deq.nc.gov/about/divisions/water-resources/water-planning/nonpoint-source-planning/falls-lake-nutrient-strategy>

# Issues Related to Interpreting Rule Language

- Evaluating the language as it appears in the Rules
- Discuss DWR's understanding of Rule language
- Reconcile DWR's previous guidance on jurisdictional load methodology
- Point out lack of specific guidance in the Rules for methods and assumptions
  - What development to include?
  - How to address onsite wastewater systems?
  - How should interim development be treated relative to new development requirements?
  - How to deal with permitted developments that were built after year thresholds (2006, 2012)?

# **The Rules: Stage 1 Objectives and Jurisdictional Loads**

# Selected Rule Language

- The following slides are selected portions of the Rules
  - Discrepancies in Rule language
  - Discrepancies relative to DWR guidance or comments
  - Supporting language for alternative approaches for developing an innovative path forward
    - Also applies to recent EPA guidance on trading
- UNRBA and DWR to organize a workshop to work through questions and concerns

# Rule Language: 15A NCAC 02B .0275-76

## [Purpose and Scope and Definitions]

- .0275(3)“The objective of Stage I is to, at a minimum, achieve and maintain nutrient-related water quality standards in the Lower Falls Reservoir as soon as possible but no later than January 15, 2021 and to improve water quality in the Upper Falls Reservoir.”
- .0275(5)(a)(viii) “Sufficient time is defined as at least two consecutive use support assessments demonstrating compliance with nutrient-related water quality standards in a given segment of Falls Reservoir.”
- .0276(12)“Lower Falls Reservoir means that portion of the reservoir downstream of State Route 50”

# Rule Language: Jurisdictional Loads

## 15A NCAC 02B .0278 [Ex Dev] (3)(a)

- “All local governments subject to this Rule shall develop load-reducing [local] programs for...approval by the Commission that include :
  - In Stage I...estimates of... nutrient loading increases from lands developed subsequent to the baseline period and not subject to the requirements of the local government's Falls Lake new development stormwater program.
  - the current loading rate shall be compared to the loading rate for these lands prior to development
  - the difference shall constitute the load reduction need in annual mass load, in pounds per year
  - Alternatively, a local government may assume uniform pre-development loading rates of 2.89 pounds/acre/year N and 0.63 pounds/acre/year P for these lands.”

# Rule Language: Jurisdictional Loads

## 15A NCAC 02B .0278 [Ex Dev] (7)

- (a) “The Division shall submit a Stage I model local program to the Commission for approval...The Division shall work in cooperation with subject local governments and other watershed interests in developing this model program, which shall include the following:
  - (i) Model local ordinances
  - (ii) Methods to quantify load reduction requirements and resulting load reduction assignments for individual local governments;
  - (iii) Methods to account for discharging sand filters, malfunctioning septic systems, and leaking collection systems; and
  - (iv) Methods to account for load reduction credits from various activities.”

# Rule Language: Jurisdictional Loads

## 15A NCAC 02B .0278 [Ex Dev] (7)

- (b) **“Within six months after the Commission’s approval of the Stage I model local program, subject local governments shall submit load reduction programs ... to the Division for review and preliminary approval and shall begin implementation and tracking of measures to reduce nutrient loads from existing developed lands within their jurisdictions.**
- (c) **“Within 20 months of the Commission’s approval of the Stage I model local program, the Division shall provide recommendations to the Commission on existing development load reduction programs. The Commission shall either approve the programs or require changes .... Should the Commission require changes, the applicable local government shall have two months to submit revisions, and the Division shall provide follow-up recommendations to the Commission within two months after receiving revisions.”**

# Rule Language: Jurisdictional Loads

## 15A NCAC 02B .0278 [Ex Dev] (7)

- (d) “Within three months after the Commission’s approval of a Stage I local existing development load reduction program, the local government shall complete adoption of and begin implementation of its existing development Stage I load reduction program.
- (e) Annual report shall include accounting of total annual expenditures, including local government funds and any state and federal grants used toward load reductions achieved from existing developed lands.”

# Rule Language: Jurisdictional Loads

## 15A NCAC 02B .0278 [Ex Dev] (7)

- (h) “Once either load reductions are achieved per annual reporting or water quality standards are met in the lake per Rule 15A NCAC 02B .0275, local governments shall submit plan programs to ensure no load increases and shall report annually per Sub-Item (e) on compliance with no increases and take additional actions as necessary.”

# **The Rules and Accounting for Onsite Wastewater Systems**

# Rule Language: Onsite Systems

## 15A NCAC 02B .0277 [New D] (5)(a)

- “At such time as data quantifying nutrient loads from onsite wastewater systems is made available, **the new development nutrient export accounting tool shall be revised** to require accounting for nutrient loading from onsite wastewater from newly developed lands that use such systems. Should research quantify significant loading from onsite wastewater systems, **the Division may also make recommendations to the Commission for Public Health to initiate rulemaking to reduce nutrient loading to surface waters from these systems.** The Division shall work in cooperation with subject local governments and other watershed interests in developing this model program;”

# Rule Language: Onsite Systems

## 15A NCAC 02B .0278 [Ex Dev] (4)

- (a) “Jurisdictions in the **Eno River and Little River** subwatersheds shall, as a part of their Stage I load reduction programs, begin and continuously **implement a program to reduce loading from discharging sand filters and malfunctioning septic systems discharging into waters of the State** within those jurisdictions and subwatersheds.”
- (c) “**The total amount of nutrient loading reductions in Stage I is not increased for local jurisdictions by the requirements** to add specific program components to address loading from malfunctioning septic systems and discharging sand filters or high nutrient loading levels pursuant to Sub-Items (4)(a) and (b) of this Item.”
- (e) A local government's **load reduction need shall be based on the developed lands** that fall within its general police powers and within the Falls watershed;

# Rule Language: Onsite Systems

## 15A NCAC 02B .0278 [Ex Dev]

- (4)(g) “Nitrogen and phosphorus loading from existing developed lands, including loading from onsite wastewater treatment systems to the extent that accounting methods allow, shall be calculated by applying the accounting tool described in Sub-Item (7)(a) and shall quantify baseline loads of nitrogen and phosphorus to surface waters in the local government’s jurisdiction as well as loading changes post-baseline. ”
- (7)(a)iii: [regarding the model program which shall include]“Methods to account for discharging sand filters, malfunctioning septic systems, and leaking collection systems”
  - Normally functioning systems are not directly or indirectly referenced in these parts

# Rule Language: Onsite Systems

## 15A NCAC 02B .0275 [Purpose] (1)

- “The scope of these rules is limited to the reduction of nutrient **loads to surface waters**”
  - The Rules only refer to discharging sand filter systems, malfunctioning septic systems, and discharges to surface waters in terms of quantifying load reduction requirements
  - Requiring load reductions from other onsite system in general would require rule making
  - The scope of the Rules is limited to “loads to surface waters”
  - Why does the recent guidance from DWR include estimating loading from normally functioning septic systems?
  - Why are local governments responsible for systems that the State issued permits for?
  - A reading of the rules generates significant questions about how to implement Stage I before we can move forward.

# Stage I Progress

# Stage I Wasteload Allocations from the Rules

- From 15A NCAC 02B .0279 [Wastewater] (4)(a)

Stage I nitrogen and phosphorus allocations for dischargers with permitted flows of 0.1 MGD or greater are as follows:

<u>Facility Name</u>	<u>NPDES No.</u>	<u>Mass Allocations (pounds/year)</u>	
		<u>Total Nitrogen</u>	<u>Total Phosphorus</u>
<u>North Durham</u>	<u>NC0023841</u>	<u>97,665</u>	<u>10,631</u>
<u>SGWASA</u>	<u>NC0026824</u>	<u>22,420</u>	<u>2,486</u>
<u>Hillsborough</u>	<u>NC0026433</u>	<u>10,422</u>	<u>1,352</u>

# Comparison of Nitrogen Allocations to 2006 and 2017 Loading

Plant	2006 (lb-N/yr)	Stage I Allocation (lb-N/yr)	2017 (lb-N/yr)	Potential Credit** (Stage I-2017) (lb-N/ac/yr)	Actual Reduction (2006-2017) (lb-N/yr)	Neuse Estuary TMDL Allocation (lb-N/yr)
NDWRF	92,441	97,665	60,913	36,752	31,528	334,851
SGWASA*	31,076	22,420	14,145	8,275	16,931	58,559
Hillsborough	28,482	10,422	5,496	4,926	22,986	57,309
<b>Total</b>	<b>151,999</b>	<b>130,507</b>	<b>80,554</b>	<b>49,953</b>	<b>71,445</b>	<b>450,719</b>

\*Multiple jurisdictions contributed funding to the SGWASA WWTP upgrades.

\*\*The potential, temporary credit is the difference between the Falls Lake Stage I Allocation and the loading reported in 2017.

# Comparison of Phosphorus Allocations to 2006 and 2017 Loading

Plant	2006 (lb-P/yr)	Stage I Allocation (lb-P/yr)	2017 (lb-P/yr)	Potential Credit** (Stage I-2017) (lb-P/ac/yr)	Actual Reduction (2006-2017) (lb-P/yr)
NDWRF	9,968	10,631	3,252	7,379	6,716
SGWASA*	11,476	2,486	692	1,794	10,784
Hillsborough	4,804	1,352	813	539	3,991
<b>Total</b>	<b>26,248</b>	<b>14,469</b>	<b>4,757</b>	<b>9,712</b>	<b>21,491</b>

\*Multiple jurisdictions contributed funding to the SGWASA WWTP upgrades.

\*\*The potential, temporary credit is the difference between the Falls Lake Stage I Allocation and the loading reported in 2017.

# Additional Efforts in the Watershed to Reduce Loading

- Reduced SSOs
- Improvements to infrastructure
- Existing development retrofits
- Land conversion
- Stream restoration projects
- Regional BMPs
- Rain gardens and cisterns
- Land conservation



Image from City of Durham showing a bioretention cell retrofit.



Image courtesy of Durham County Soil and Water Conservation District (before stream restoration).



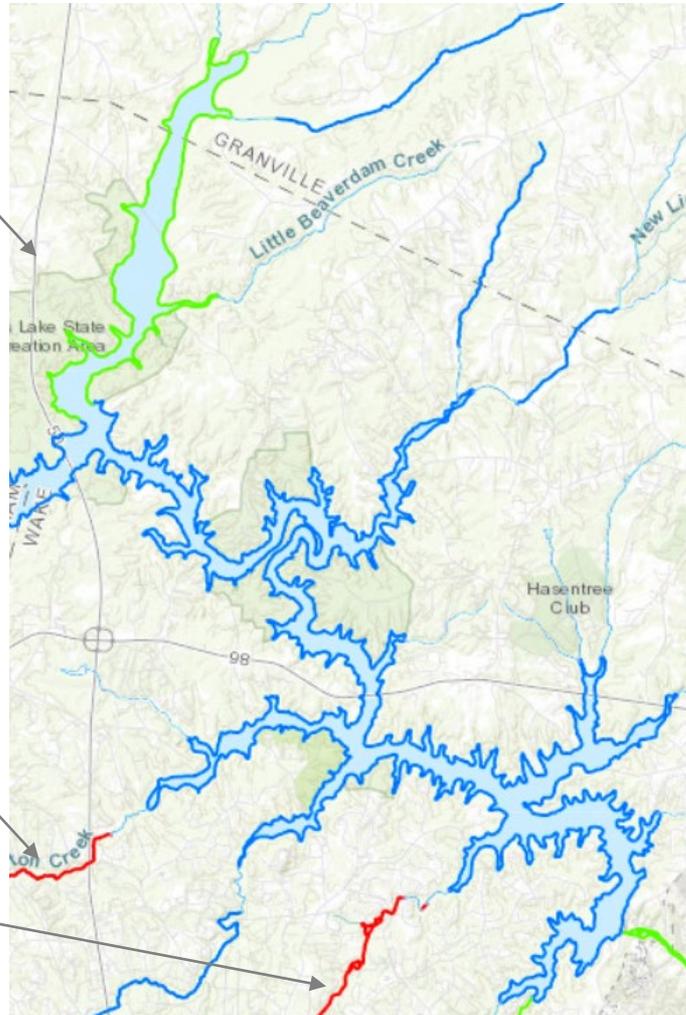
Google Earth images showing removal of a building in Roxboro in 2016.

# Progress Toward Stage I – Lower Lake 2014 Use Assessment:

Highway 50

Barton Creek  
(benthos)

Cedar Creek  
(benthos)



2014 Integrated Report

- 2 - Supporting except for statewide fish tissue mercury
- 3 - Insufficient data
- 4 - Impaired - has TMDL or alternative plan
- 5 - Impaired (303(d) list) - needs TMDL or alternative plan

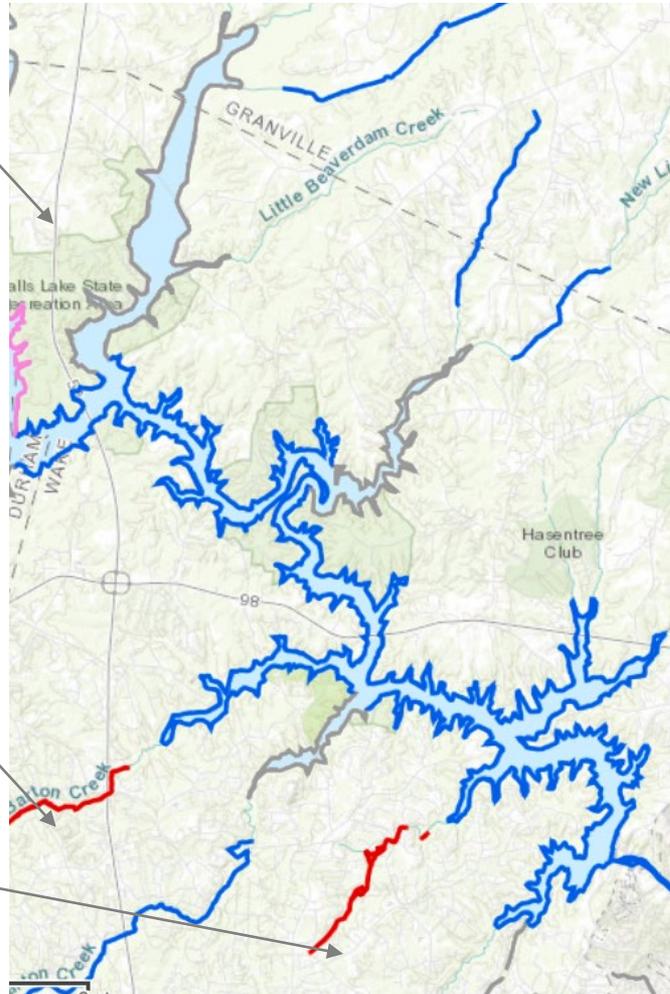
Other than the statewide fish tissue mercury impairment, Falls Lake below Highway 50 was supporting its uses.

# Progress Toward Stage I – Lower Lake 2016 Use Assessment:

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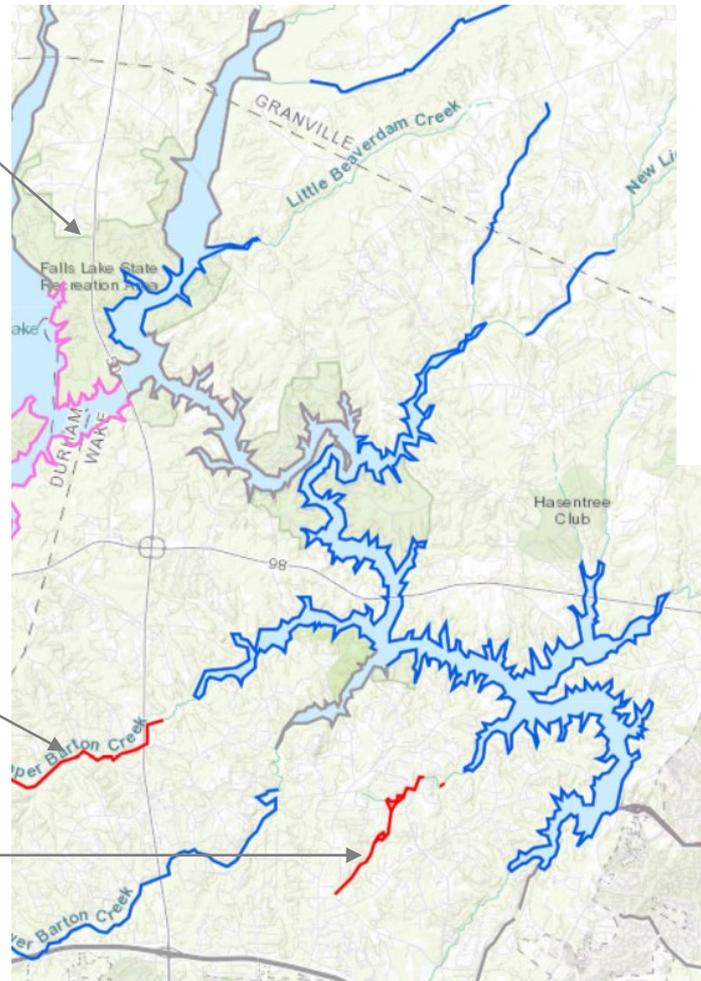
Other than the statewide fish tissue mercury impairment, Falls Lake below Highway 50 was supporting its uses.

# Progress Toward Stage I – Lower Lake 2018 Draft Use Assessment:

Highway 50

Barton Creek

Cedar Creek



- 2 - Supporting except for statewide fish tissue mercury
- 3 - Insufficient data
- 4 - Impaired - has TMDL or alternative plan
- 5 - Impaired (303(d) list) - needs TMDL or alternative plan

Other than the statewide fish tissue mercury impairment, Falls Lake below Highway 50 was supporting its uses or the data were inclusive.

# **Summary of Jurisdictional Loads Discussions (2/15 and 2/27)**

# Predominant Type of Development

- Mostly residential ranging from
  - Large lots in counties
  - Infill development
  - Individual single family
  - Subdivisions
- Limited commercial and industrial

# Consistencies in Methods and Assumptions

- Most pre-development land use was forest
- New streets were included as part of the subdivisions
- Buy down credits were accounted for
- All had some level of stormwater treatment during the interim period
  - All: Neuse Rule requirement (2007) for development not to exceed 3.6 lb-N/ac/yr
  - Some: within a water supply overlay were also meeting the 85% removal of TSS (e.g., wet ponds)
- All had new development requirements in place by mid 2012

# Discrepancies in Methods and Assumptions

- Method applied for pre-development loading rates
  - Rule allowed, or accounting tool
- Start date for counting interim development
- Which developments to include
  - All permits, or only stormwater permits
  - All lots, or only ones greater than new D threshold
- Parcel area - different jurisdictions manage permits differently
  - Total parcel area, or disturbed area
- Subdivision buildout
  - When permitted, or lot by lot
- Onsite wastewater treatment systems
  - Accounted for, or did not

# Summary of Estimated Jurisdictional Loads (Preliminary)

- A focus group comprising the largest areas of development participated in a focus group meeting and shared their preliminary estimates of loading increases resulting from interim development
- Table of loads are sorted by per acre nitrogen load increases for easier comparison
- Two tables are provided
  1. Includes information on the methods used to calculate pre and post development loading rates
  2. Includes information on development type
- Observations regarding method applied and development type follow each table

# Preliminary Results and Method

Jurisdiction	Interim Area (ac)	Increase lb-N/yr	Increase lb-P/yr	Increase lb-N/ac/yr	Increase lb-P/ac/yr	Method Pre D	Method Post D
Granville Co.	4,280.6*	0	0.0	0.00	0.00	Rule allowed	JFSLAT+OWWS
Person Co.	2,464.4*	0	0.0	0.00	0.00	Rule allowed	JFSLAT+OWWS
Durham Co.	736.1	270.8	94.4	0.41	0.13	JFSLAT	JFSLAT
Wake Co.	258.5	187.0	48.0	0.72	0.19	JFSLAT	JFSLAT
City – Durham	3,390.0	2,859.0	297.0	0.84	0.09	Neuse/Tar-Pam	Neuse/Tar-Pam
Orange Co.	551.0	994.3	76.1	1.02	0.25	SNAP	SNAP
Butner	283.6*	436.5	34.9	1.54	0.12	Rule allowed	JFSLAT
Hillsborough	528.0	868.5	166.9	1.64	0.32	SNAP	SNAP
Stem	52.2*	120.6	47.8	2.31	0.92	Rule allowed	JFSLAT
Creedmoor	30.3*	184.9	56.7	6.10	1.87	Rule allowed	JFSLAT

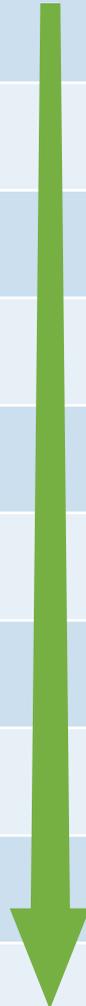
\*These areas reflect the entire parcel area and are not limited to the disturbed area.

# Comparison of Results by Method

- The method applied was not strongly correlated with per acre loading rate increases when comparing across jurisdictions
  - The rule-allowed pre development loading rates resulted in the **lowest** per acre load increases (i.e., 0) **and** the **highest** per acre load increases
  - Calculation tools generated results in the middle of the per acre loading rate increases

# Preliminary Results and Development Type

Jurisdiction	Interim Area (ac)	Increase lb-N/yr	Increase lb-P/yr	Increase lb-N/ac/yr	Increase lb-P/ac/yr	Development Type
Granville Co.	4,280.6*	0	0.0	0.00	0.00	Large lot residential
Person Co.	2,464.4*	0	0.0	0.00	0.00	Large lot residential
Durham Co.	736.1	270.8	94.4	0.41	0.13	Mostly residential with some industrial and commercial
Wake Co.	258.5	187.0	48.0	0.72	0.19	Low density and large lot residential
City – Durham	3,390.0	2,859.0	297.0	0.84	0.09	Residential and commercial
Orange Co.	551.0	994.3	76.1	1.02	0.25	Residential and institutional
Butner	283.6*	436.5	34.9	1.54	0.12	Residential (subdivisions) and commercial
Hillsborough	528.0	868.5	166.9	1.64	0.32	Residential (subdivisions and infill)
Stem	52.2*	120.6	47.8	2.31	0.92	Residential (subdivisions)
Creedmoor	30.3*	184.9	56.7	6.10	1.87	Residential (subdivisions)



\*These areas reflect the entire parcel area and are not limited to the disturbed area.

# Comparison of Results by Development Type

- Development type was more consistent in the amount of per acre loading rate increases
  - Large lot residential had low to zero per acre increases
    - These types of developments have usually not required stormwater controls under the new D requirements
    - Granville and Person Counties were 85% to 95% developed as large lot residential
  - Per acre increases were higher with the addition of some industrial and commercial
  - High density subdivisions had the greatest per acre loading rate increases

# Outstanding Issues / Rule Consistency

- Different assumptions
  - Not everyone is accounting for the same sources
    - Onsite wastewater treatment
    - Types of permits included
  - Vested projects that were permitted but not built prior to cut off
    - Most participants assumed fully built out, some accounted for lots as they were developed
- Different methods were applied for calculations

# Additional Questions

- How should interim development be treated relative to new D requirements?
  - Which sites should be included?
    - Only those that would be triggered under new D rule in terms of disturbed area, or
    - Any amount of development?
  - If site loading rates are less than or equal to the new D targets, should those require reductions under Stage I?
    - Why require reductions for interim development that would not have required reductions under new D rules?

# Comparison of Jurisdictional Loading Increases to Stage I Progress

- Based on the data compiled from the focus group, the increase in loading due to interim development is much lower than the potential temporary credit associated with wastewater treatment

## **Increase in loading << Stage 1 WW Credit\***

- Nitrogen: 5,994 lb-N/yr << 49,953 lb-N/yr
- Phosphorus: 831 lb-P/yr << 9,712 lb-P/yr
- Additional nutrient reducing actions have been implemented and continue to be implemented
- The lower lake has met the chlorophyll a criterion, or the data is insufficient to make a determination otherwise, for the past three assessment cycles

\*This potential credit is relative to Stage I allocations; the actual reductions relative to 2006 are significantly higher.

# Options for Stage 1 Implementation

# Option 1. Rely on Jurisdictional Loading Estimates for Implementation

- Individual members calculate their loading increase and reduce accordingly
  - Issues/constraints
    - Given progress towards Stage I, local governments may feel unduly burdened
    - Equity and fairness (assumptions and methods)
    - Provisions and allowances within Rule language
- Additional progress towards nutrient reductions may be stalled
  - Some jurisdictions have already met their requirements with WWTP reductions
  - Others have calculated no net load increase

# Option 2. Hold Formal Implementation Until Re-examination is Complete

- May rely on current Stage I progress until the re-examination is complete
- Individual communities can voluntarily implement projects and apply credits to the new strategy goals
- Issues/constraints
  - Concerns with other stakeholders (public interests)
  - Jurisdictions with wastewater treatment plants or who have already begun implementing projects for Stage I may feel unfairly burdened; these reductions should be accounted for in revised strategy
  - Will require legislative action
- Additional progress towards nutrient reductions may be stalled
  - Some jurisdictions may continue to work toward future load reduction requirements
  - Some practices may be installed for other purposes that also result in nutrient reductions

# Option 3. Formal, Collaborative Project-Based Implementation

- Collaborative effort to continue nutrient reducing activities
- Demonstrates commitment of the UNRBA to continued progress
- Allows flexibility in terms of costs, collaboration, and funding sources (including grants)
  - EPA policy shift supports this type of approach
- Communities would continue to implement projects and apply credits to the new strategy goals when re-examination is complete
- Constraints for establishing a formal framework
  - Require negotiations and consensus among members
  - Present scheduling challenge with respect to DWR model program development
  - Will require legislative action; more likely to generate support from other stakeholders than Option 2

# **EPA 2019 Guidance on Trading**

# EPA 2019 Guidance on Trading

- Removes administrative burden
- Shifts focus from uncertainty/trading factors to adaptive management
- Allows more flexibility in implementation, program operation, and financial resources

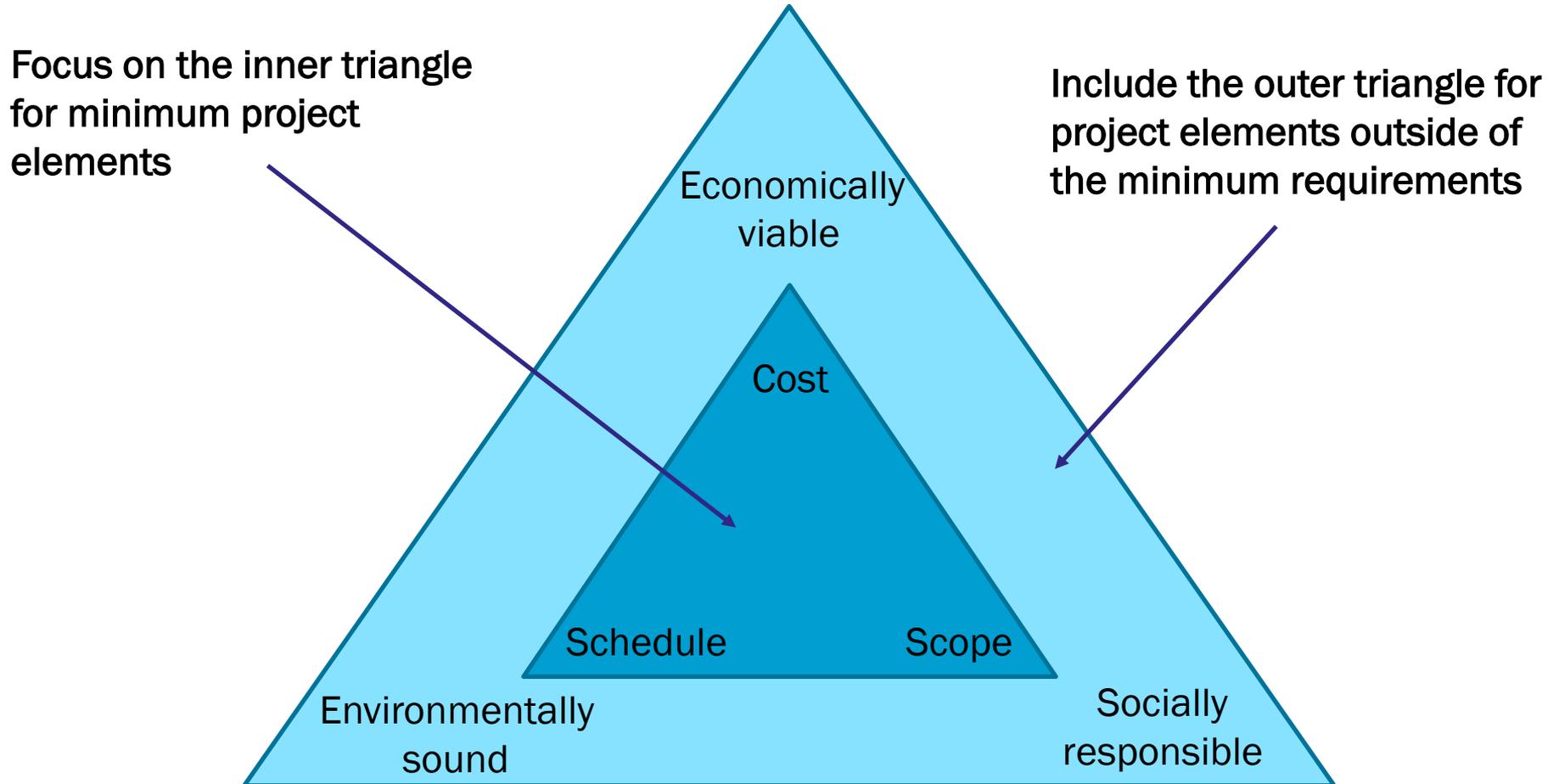
	<p>UNITED STATES ENVIRONMENTAL PROTECTION AGENCY WASHINGTON, D.C. 20460</p> <p>FEB 6 2019</p> <p>OFFICE OF WATER</p>
<p><b><u>MEMORANDUM</u></b></p>	
<b>SUBJECT:</b>	Updating the Environmental Protection Agency's (EPA) Water Quality Trading Policy to Promote Market-Based Mechanisms for Improving Water Quality
<b>FROM:</b>	David P. Ross Assistant Administrator 
<b>TO:</b>	Regional Administrators, Region 1-10

# Key Changes to the Policy

- Not requiring equal precision between point sources and non point sources, or uncertainty factors to account
- Not requiring 3<sup>rd</sup> party verification of credits if the cost is too burdensome to be sustainable
- Allowing for use of models rather than trading ratios
- Simplifying requirements for establishing the baseline for minimum practices before credits can be earned
- Allowing a single project to generate and trade credits across multiple types of markets
- Allowing grants and bonds to be used to finance projects

# **MRSW Status Update**

# MRSW Decision Framework (1/28/2019)



# MRSW Meeting Topics

- Discuss model time step (hourly, daily, 6-hr)
  - Data availability and time to develop inputs
  - Impacts to model run time and calibration time
- Discuss watershed modeling units and further delineation
  - Inaccuracies with respect to delineating at political boundaries
  - Additional GIS processing time
  - Model run time and calibration time
  - Post-processing to assign/correct jurisdictional loads
- UNRBA/DEQ Re-examination MOA

# Monitoring Program Status Update

# Water Quality and Field Data Received

Dataset	Origin	Status	Description	Period of Record
Routine Monitoring	Environment 1	All Data Received	Monthly and bi-monthly routine lab and field data	August 2014 to October 2018
Special Studies	Environment 1	All Data Received	Bathymetric data, sediment data, high flow data	Varies
In-lake Algal Data	NC DEQ	All Data Received	Monthly observations of algae biovolumes in Falls Lake	2012 to October 2018
In-lake Water Quality	NC DEQ	All Data Received	Monthly water quality data for monitoring sites in Falls Lake	2005 to 2007, 2014 to Oct. 2018
Tributary Water Quality	NC DEQ	Pending	Monthly water quality data monitoring sites in the Falls Lake watershed	2005 to 2007, 2014 to 2016
In-lake Profile	CAAE	Pending	Monthly water quality data for profilers in Falls Lake	2006 to 2018
In-lake Water Quality	CAAE	Pending	Monthly water quality data for monitoring sites in Falls Lake	2006 to 2018
In-lake Water Quality	City of Durham	All Data Received	Monthly water quality data for monitoring sites in Falls Lake	2015 to 2018 (Growing Season)
In-lake Water Quality	City of Raleigh	All Data Received	Monthly water quality data for monitoring sites in Falls Lake	2013 to 2018

# Data Management Agreement with the Center for Applied Aquatic Ecology (CAAE)

- CAAE agreed to provide their Falls Lake data if the following conditions were guaranteed
  - CAAE data would not be posted to the UNRBA online database
  - UNRBA will not distribute CAAE raw data
  - Summaries of CAAE data could be included in the Annual Report to provide a comprehensive view of all data collected

# Final Monitoring Report for Modeling Purposes

- Report preparation under way
- Final report not only conveys data to Modeling Team, but will stand on its own with results and interpretation
- New types of analyses are being explored
  - Loading analyses
  - Sediment studies and inlake nutrient releases
  - Bathymetry measurements
  - Residence time
- Coordinating with Executive Director and Subject Matter Experts on report content, and with Modeling Team
- Targeting April 2019 for PFC review

# Additional Discussion