



North Carolina Integrated Report: Falls Lake

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Outline

- Integrated Report
- Assessment Changes
- Assessment Unit Designation Process
- Falls Lake IR History
- Recommendations



North Carolina's Integrated Report (IR)

- Combines sections 305(b) and 303(d) of Clean Water Act
- Summarizes assessment results for all monitored waters
- Due to EPA every even-numbered year
- 5 year rolling data window:
 - 2018 IR 2012-2016
 - 2020 IR 2014-2018
 - 2022 IR 2016-2020



Integrated Report Assessment Categories

1 Meeting criteria

2

3 No info/inconclusive

4

Criteria exceeded

5

Falls Lake is NOT on
the 303(d) List



303(d) List



Why is Falls Lake not on 303(d) List?

- Falls Lake does NOT have a TMDL
- Nutrient Management Strategy in place through state rulemaking (15A NCAC 02B .0275)
- EPA considers NMS a TMDL Alternative (4b Demonstration)
- 4b requires implementation reporting every 2 years
- EPA can put water back on 303(d) list if implementation is not happening



EMC Role

- Defined by statute
- EMC establishes the **303(d) Listing and Delisting Methodology**
- EMC does not approve the resulting 303(d) list



History - Assessment Changes

- 2008 – NC shifts to statewide analysis, previously tied to basin plans; numerical method for impairment based on greater than 10% exceedance rate
- 2014 – EMC takes on role of approving 303(d) Assessment Methodology; adds in binomial distribution (90% statistical confidence in 10% exceedance rate); does not address delisting; EPA partially approves and adds back waters not approved for delisting
- 2016 – EMC does not make substantive changes to methodology; EPA again partially approves and adds back waters not approved for delisting
- 2018 – DWR working closely with EMC and EPA adapts methodology to account for delisting and balancing decision making
- 2020 – Slight adjustment to numerical method to account for waters where there is a lot of monitoring
- 2022 – 50th Anniversary of Clean Water Act; DWR not proposing any changes to numerical method



History - 2018 303(d) Assessment Changes

Changes were in response to EPA objections that held-up action, caused partial disapprovals in 2014 and 2016

1. Added explicit delisting process
2. Added a process to evaluate small datasets
3. Balanced statistical criteria for meeting and exceeding decisions



Methodology Updates for 2020

Based on public comments received during 2018 review:

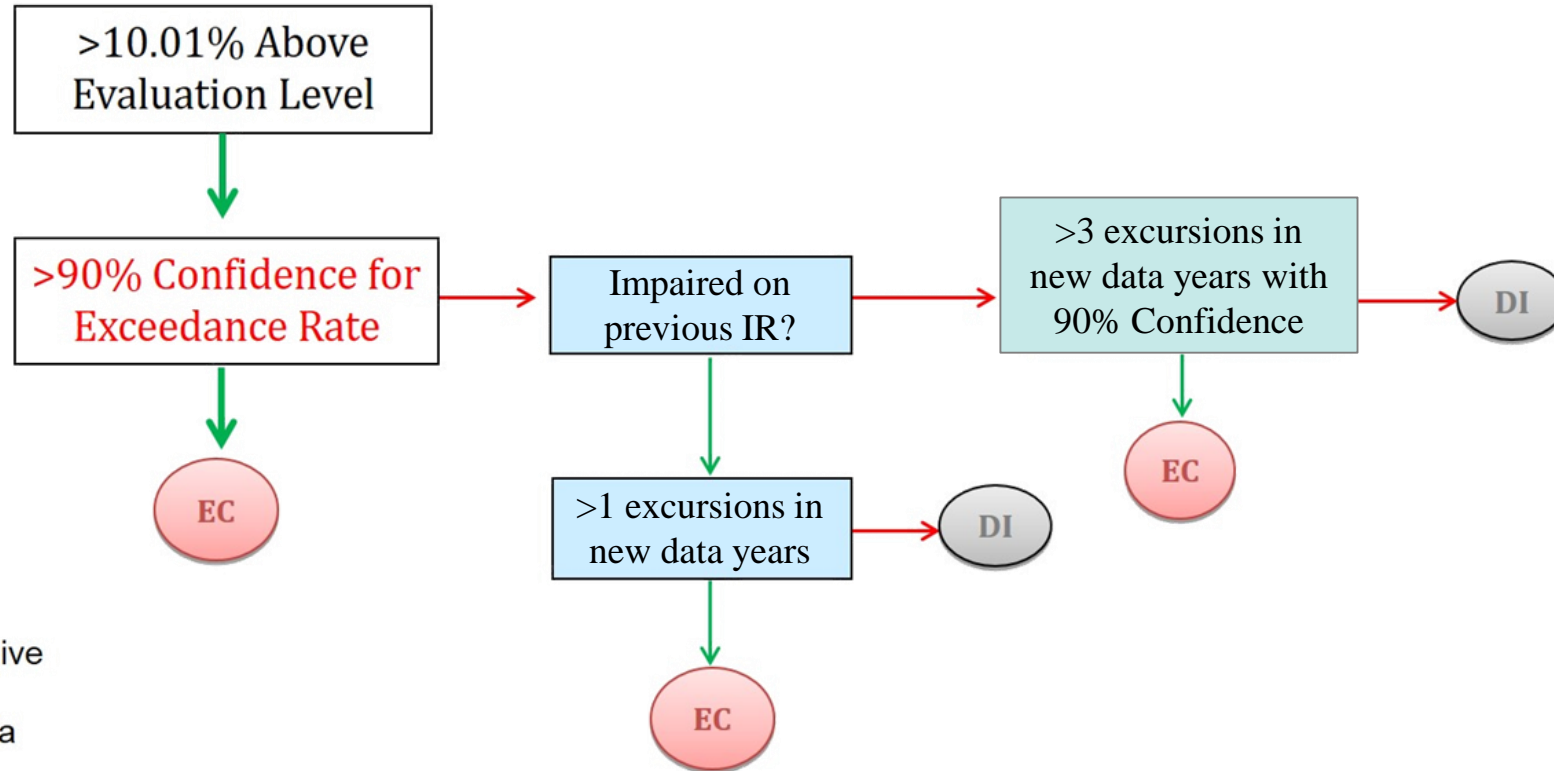
- Added a section on assessment unit (AU) delineation*
- Addressed an unintended consequence for waters not previously listed with greater than 3 excursions in new data years
- Added delisting process for old total metals listings*

* Not really a change, but is added to the 2020 303(d) Listing and Delisting Methodology based on public comment



IR Assessment Process

Greater than 10% exceedance, less than 90% confidence



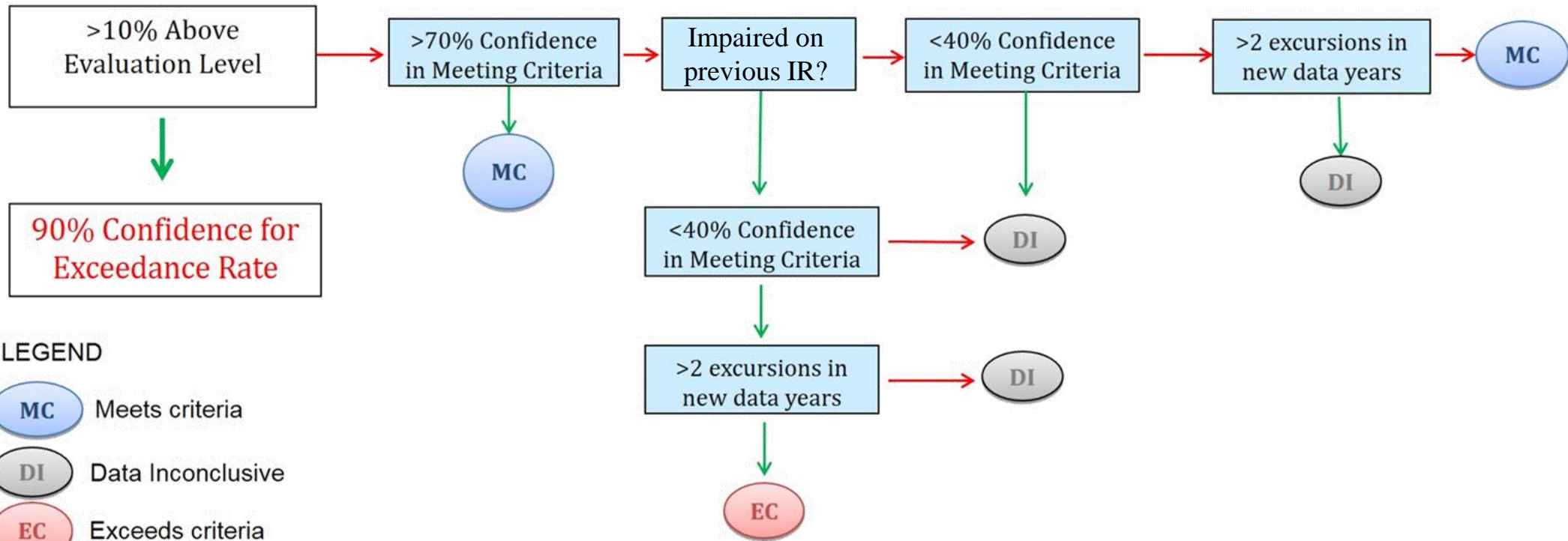
LEGEND

- MC Meets criteria
- DI Data Inconclusive
- EC Exceeds criteria

- Yes
- No

IR Assessment Process

Less than 10% exceedance rate



LEGEND

- MC** Meets criteria
- DI** Data Inconclusive
- EC** Exceeds criteria

- ↓ Yes
- No

What is an Assessment Unit (AU)?

- Spatial extent of a water quality “assessment”
- Used for 303(d) / IR
- Concept of AU:
 - Represents an area where water quality is expected to be similar
 - Can have 1 or more monitoring station(s)

Example:

AU 27-(1): Falls Lake from source (confluence of Eno River Arm of Falls Lake and Flat River Arm of Falls Lake) to I-85 bridge



What causes AU changes?

- Monitoring stations are first assessed individually
- If there are differences in resulting assessment (where there are multiple stations in 1 AU), AU is split
 - Due to changes in water quality, or
 - New stations have been added, or
 - Methodology changes have impacted assessment decisions
- Applied statewide
- This has been the procedure since 2004



Why is this method used?

- Consistent with the standard
Chlorophyll-a: not greater than 40 µg/l for lakes, reservoirs, and other waters subject to growths of macroscopic or microscopic vegetation
- Adds transparency
- Avoids having to make arbitrary decisions
- Avoids having to impair or rate inconclusive larger areas than necessary
- Acknowledges where waters are meeting criteria
- Acknowledges where there are “hot spots”



What is causing Falls Lake AU splits?

- **Short-term changes in water quality**
- Changes in assessment methodology in 2014
- Additional stations have been added – NCSU CAAE/City of Raleigh (starting with 2016 IR)



Falls Rules

- Are Assessment Units defined in the rules?
 - NO
 - Attainment targets in Rule have NEVER aligned with Falls Lake assessment units



What happened in 2020?

- Third party data was not submitted
 - Multiple requests from DWR
- Result – DWR data drove assessment
- Methodology - *“Assessments based on older data are carried forward if newer data or information were not available to change the previous assessment decision.”*
- CA AE – back on track to submit for 2022

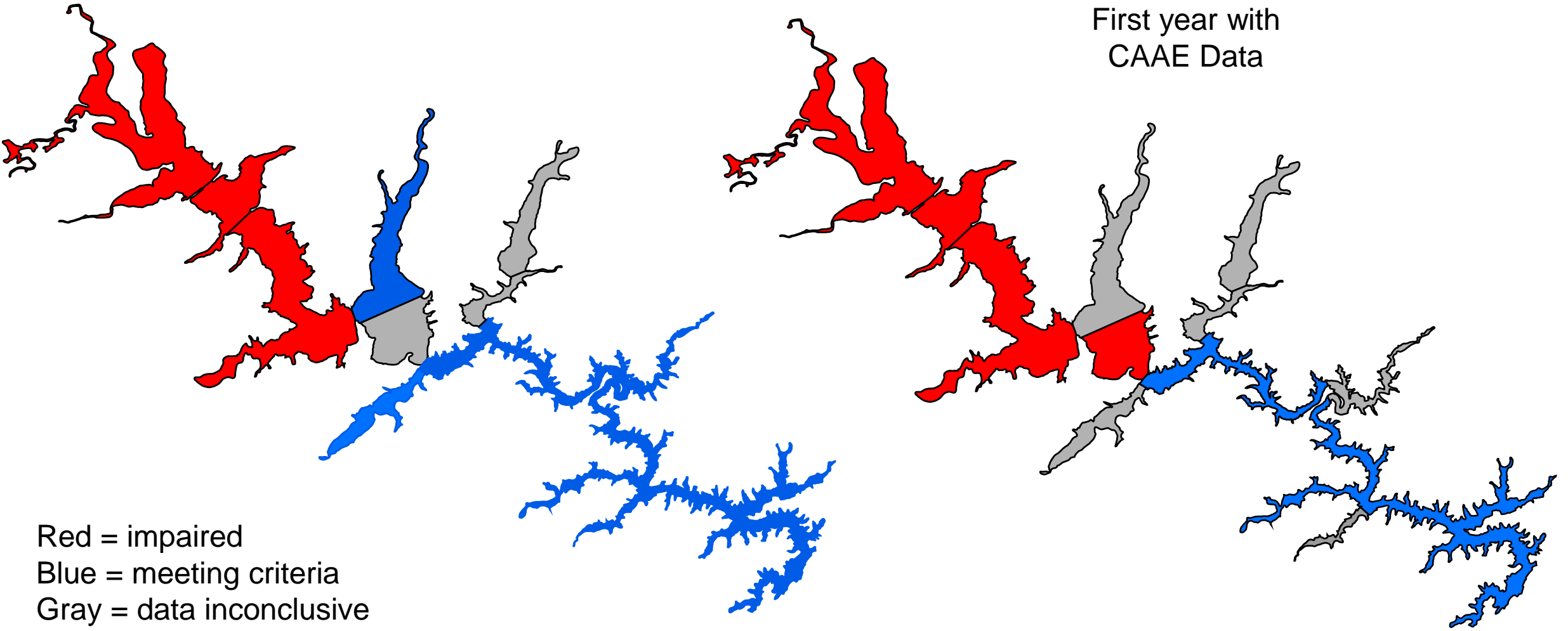


Falls Lake Chlorophyll-a IR Changes

2014

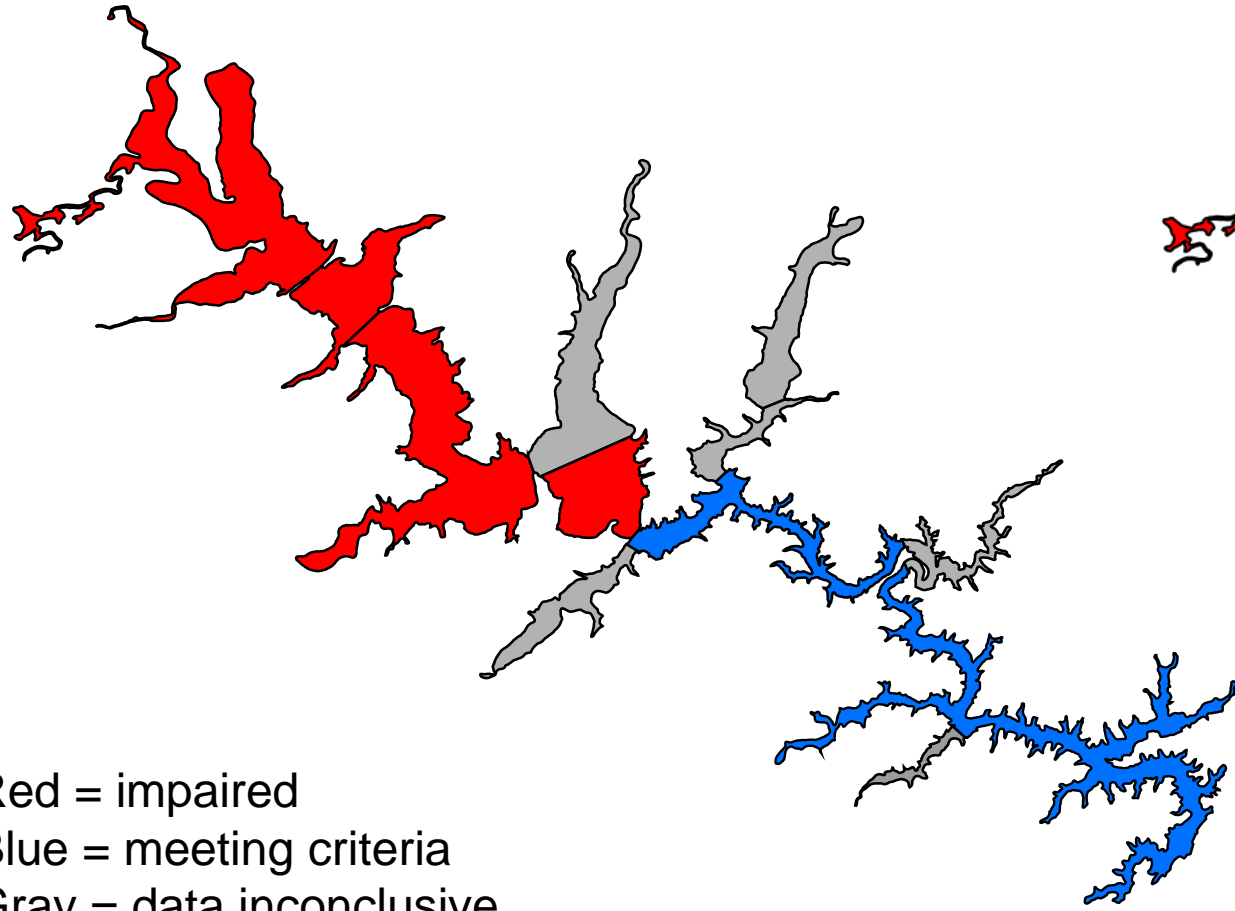
2016*

First year with
CAAE Data

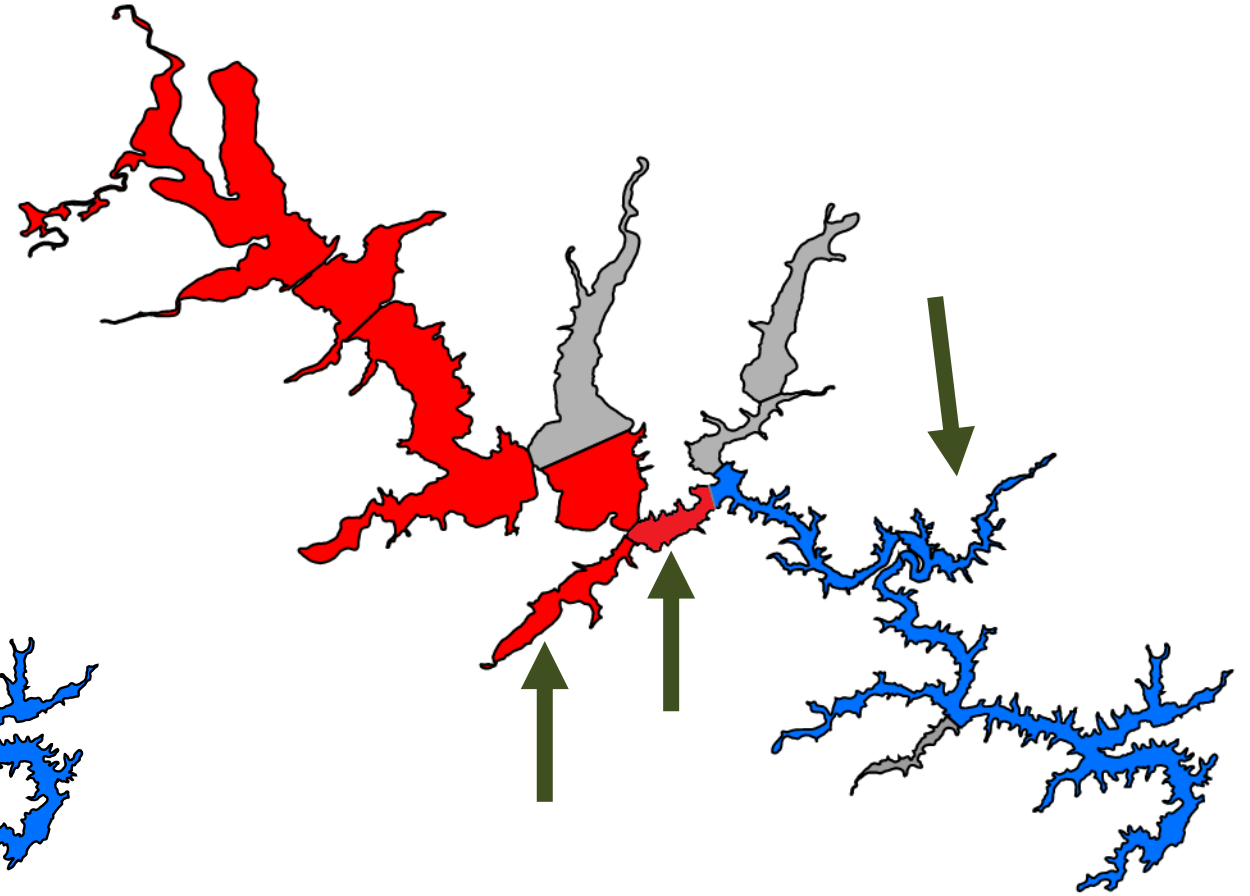


Falls Lake Chlorophyll-a IR Changes

2016



2018

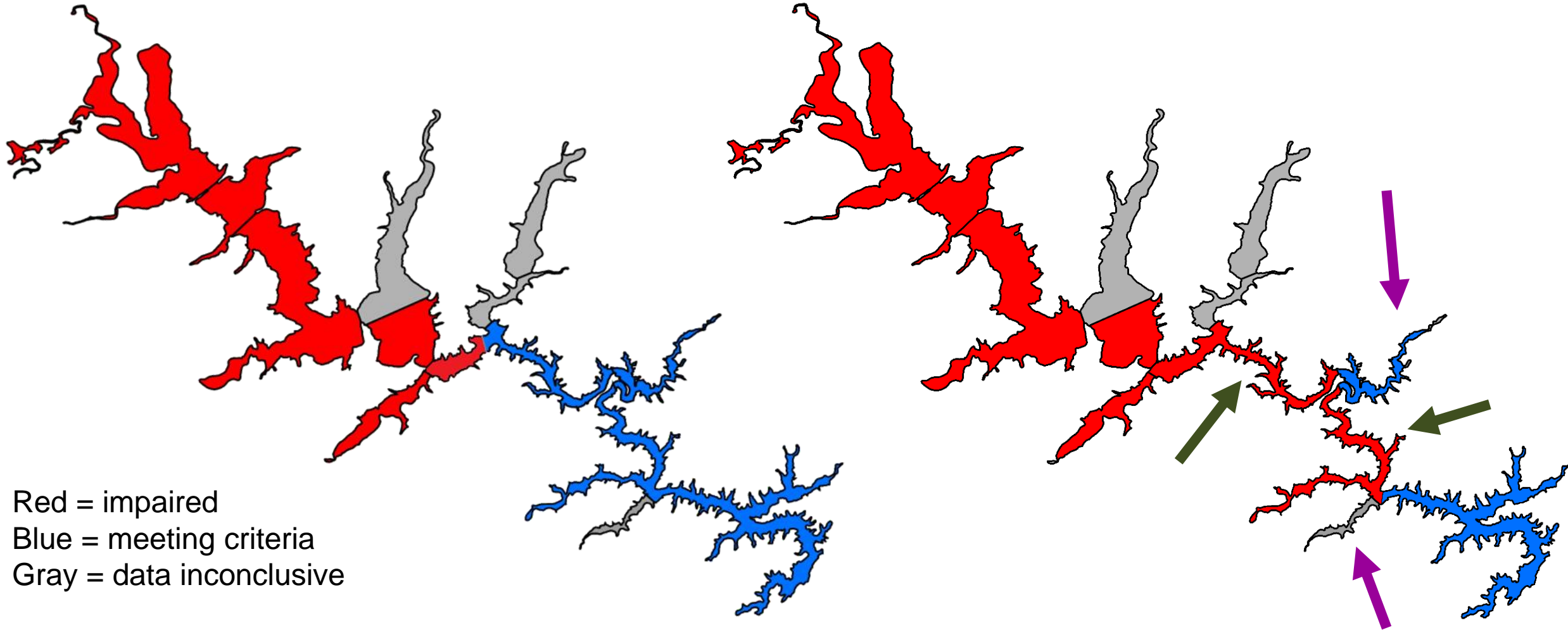


Red = impaired
Blue = meeting criteria
Gray = data inconclusive

Falls Lake Chlorophyll-a IR Changes

2018

2020



Falls Rules (emphasis added)

- Implications of attainment

Where the Division finds, based on reservoir monitoring, that nutrient-related water quality standards are attained in a previously impaired segment of Falls Reservoir, ..., and are met for sufficient time to demonstrate sustained maintenance of standards, ..., it shall notify affected parties in that segment's watershed that further load reductions are not required and of requirements for maintenance of measures to prevent loading increases. Sufficient time is defined as at least two consecutive use support assessments demonstrating compliance.



IR as a Strategy Implementation Tracker?

- No other Nutrient Management Strategy defines attainment goals using Integrated Report results
 - Same data years used for multiple IRs
 - Methodology changes
 - Weather happens!
 - Not reflective of long term trends
 - Other nutrient management strategies use trend analysis to evaluate progress
 - Falls 5-year report includes trend analysis



In-Lake Chlorophyll a

- In-lake Chlorophyll-a will take time to react to changes in loading
 - Falls Lake 5-year update shows some loading reductions, but not enough to achieve strategy
 - Evaluating strategy implementation progress is dependent on evaluating loading reductions FIRST
 - If after all load reductions have been achieved and chla still not achieved in lake – then a reevaluation is needed
 - Number of assessment units does not matter for a not to exceed standard

Recommendations

- Apply lessons learned
- Falls Lake rules readoption is the appropriate place to start any site specific changes
- Implementation occurring regardless of IR results (IAIA, etc)
- UNRBA's regulatory options evaluation will drive any site specific changes for Falls Lake
 - Essential to document process and science
- Work with all stakeholders to refine Falls Lake rules – clarify goals for attainment



Questions?

Thank you!

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