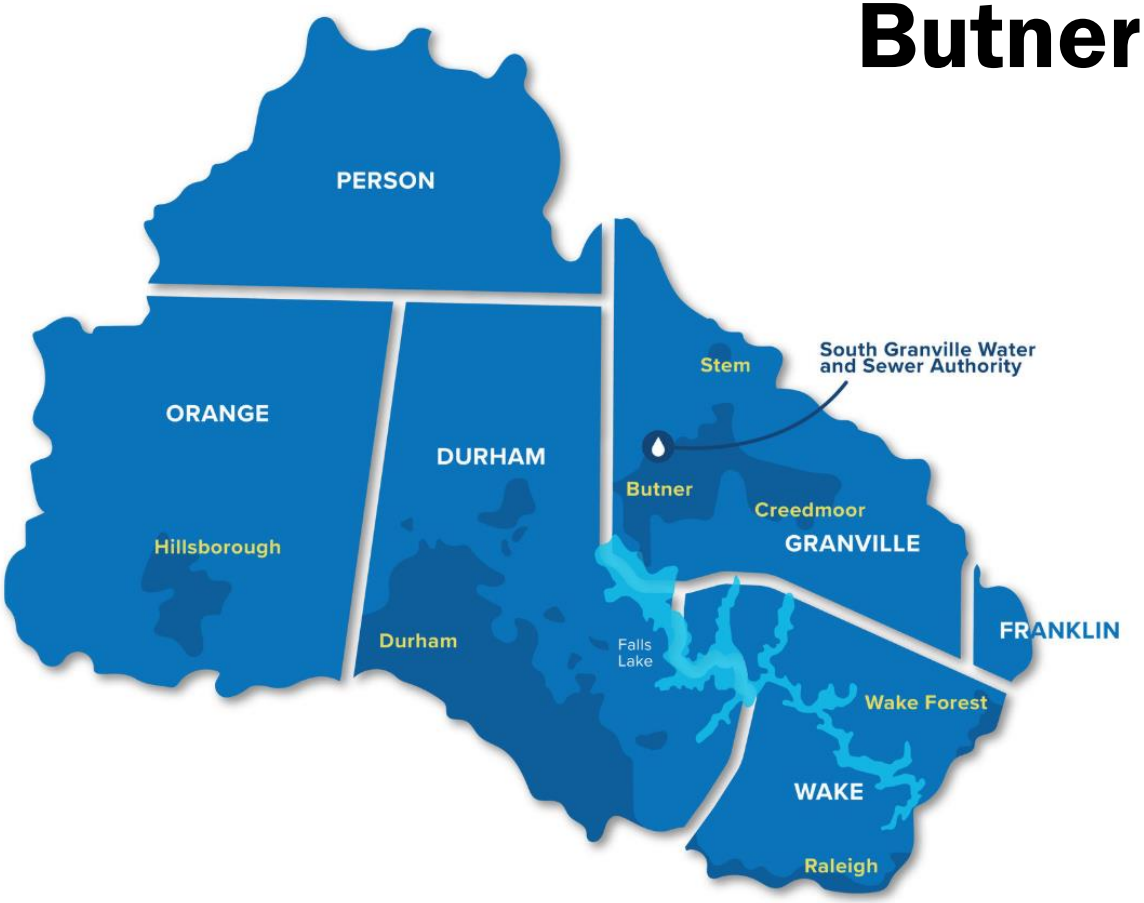
UNRBA Board Meeting
June 19, 2019
Butner Town Hall



Opening—Sig Hutchinson

Opening

- Introductions and announcements
- Roll call for quorum
- Identification of any conflicts
- Review agenda

Action Items

Approval of Meeting Minutes, Treasurer's Report, and Contract Approvals

Information posted to website

Approval of May 15, 2019 Meeting Minutes

Approval of the Treasurer's Report

6/12/2019

Balance Forward: (per bank statement - 4/25/19)	Checking	$	334,962.05
	Savings		508,180.41
Debits:			
	Hicks Wrenn (February 19 Inv)		504.00
	McGill Asso. (April 19 Inv)		14,075.69
	Brown & Caldwell (MP, FY 19, March, 19 Inv)		15,733.27
	Brown & Caldwell (MRS, FY 19, March, 19 Inv)		110,496.64
	Sauber Water Consulting (March & April 19 Invs)		4,620.00
	MFG Consulting, LLC (March & April, 19 Invs)		220.00
	Phthisic Consulting Inc. (April 19 Inv)		760.20
	HDR, Inc. (March & April 19 Invs)		2,472.46
	Bank Fees		1.00
	Total Debits	$	148,883.26
Credits:	Interest (checking)	$	31.51
	Interest (savings)		187.99
	FY 2019-20 Membership Fees		-
Account Balance (per bank statement - 5/22/19)	Checking	$	186,110.30
	Savings		508,368.40
	Total UNRBA Account Balance :	**$**	**694,478.70**
Outstanding invoices/deposits in process since the close of bank statement (5/22/19):			
Debits:	McGill Asso. (May 19 Inv)	$	17,312.76
	Brown & Caldwell (MP, FY 19, April, 19 Inv)		-
	Brown & Caldwell (MRS, FY 19, April, 19 Inv)		-
	HDR, Inc. (May 19 Inv)		2,847.34
	Sauber Water Consulting (May 19 Inv)		5,250.00
	MFG Consulting, LLC (May 19 Inv)		140.00
	Phthisic Consulting Inc. (May 19 Inv)		622.12
Credits:	No credits this period	$	-
	Current Account Balances:	Checking	$ 159,938.08
		Savings	508,368.40
	Total UNRBA Account Balance :	**$**	**668,306.48**

Contract Approvals for FY2020

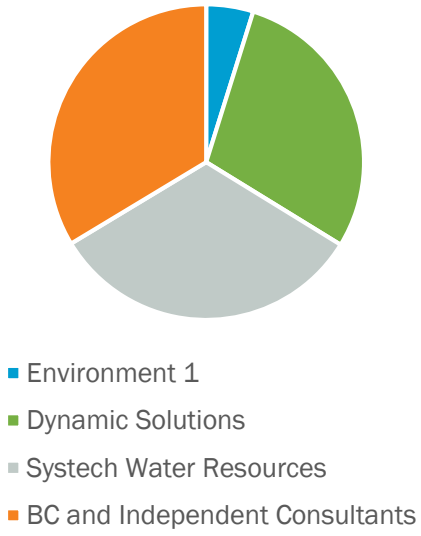
- Modeling and Regulatory Support (MRS) and Monitoring
- HDR Contract Modification
- Executive Director Services Contract
- Subject Matter Expert (SME) Contracts
- Web Support Services

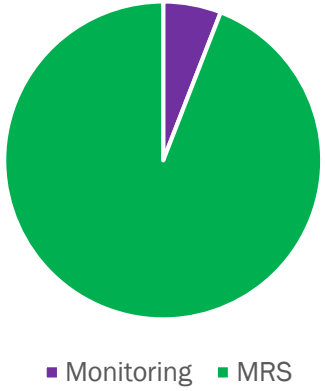
Status Reports and Informational Items

Modeling and Regulatory Support Status

FY2020 Anticipated Budget for the Re-examination

- Combine the transitional monitoring program, modeling, and regulatory support in a single contract
- Anticipated budget is $755K





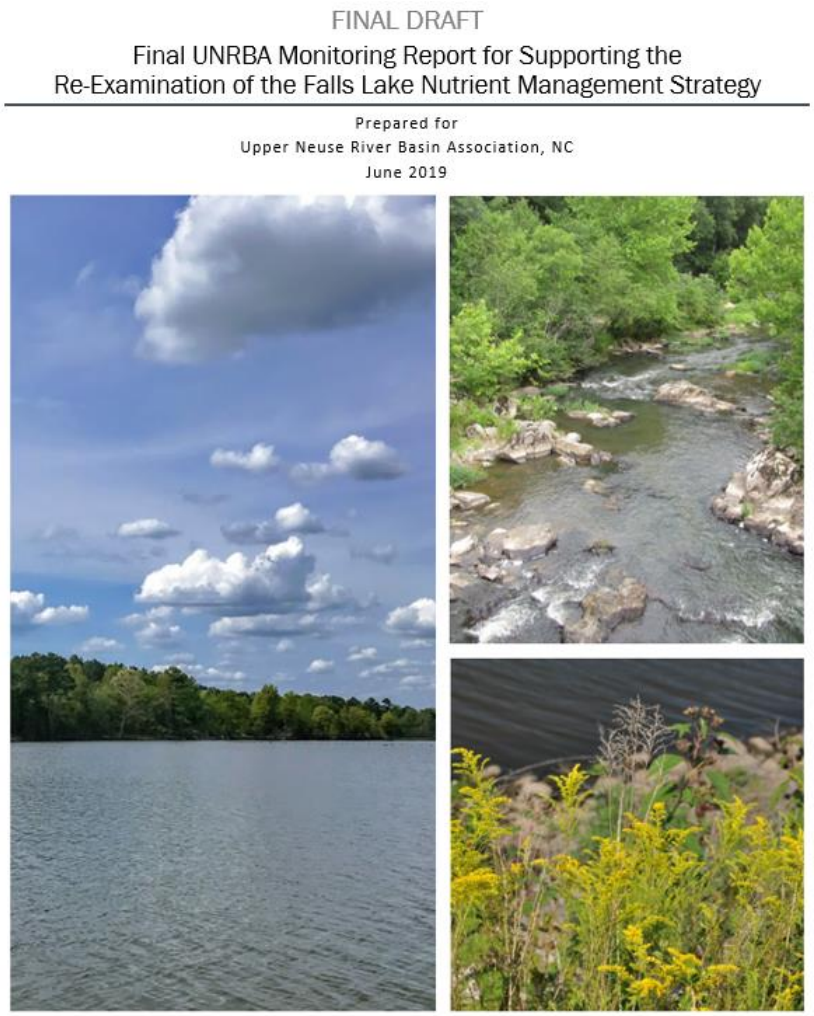
Proposed Draft FY2020 Scope of Work for the Re-examination

- Continue the transitional monitoring program
- Calibrate and validate the watershed and lake models
  - Stream flows
  - Lake levels
- Prepare for water quality calibration in the next year
- Continue with statistical model development
- Continue stakeholder engagement
- Support communications
- Support the UNRBA in the development of a decision methodology or framework

Monitoring Program Status

Final UNRBA Monitoring Report for Supporting Re-Examination of the Falls Lake Nutrient Strategy

- Draft has been reviewed by PFC and revised accordingly
- Draft provided to the Board prior to this meeting
- Includes expanded discussion and analyses
- Report will be finalized and posted based on Board approval
- Highlights from the report follow



Monitoring Program Successes

- The UNRBA completed 51 months of data collection to support the modeling for the re-examination
  - August 2014 to October 2018
  - Monthly sampling
  - 38 stations
  - Up to 23 sampling parameters depending on the type of station
- Nine special studies were also conducted to answer specific questions

The UNRBA has collected almost 30 thousand data points!

Data are available to the public:

http://data.unrba.org/index.php

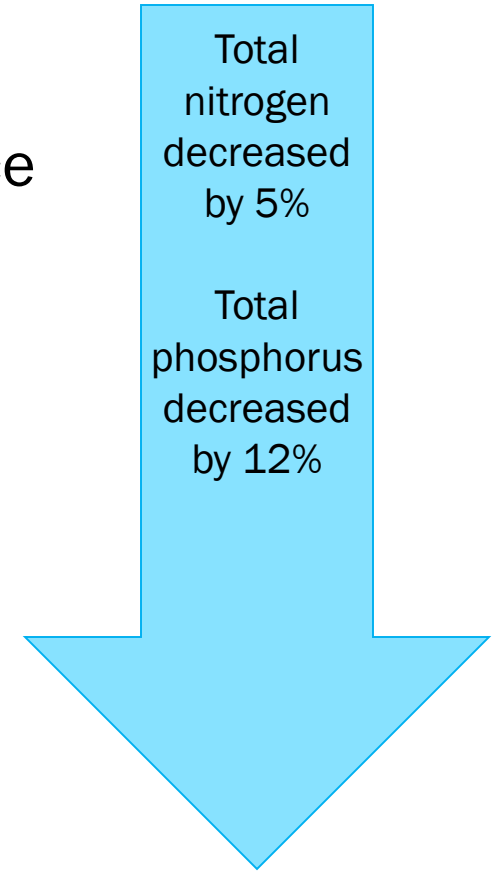
Hydrologic Conditions

- For the UNRBA monitoring period (2014-2018)
  - Annual rainfall totals were 4 to 11 percent **higher** than the 30-year average
  - 36 major storms affected the area
- For the DWR monitoring period (2005-2007)
  - Annual rainfall totals were 13 to 57 percent **lower** than the 30-year average
  - Included a record drought
  - 10 major storms affected the area

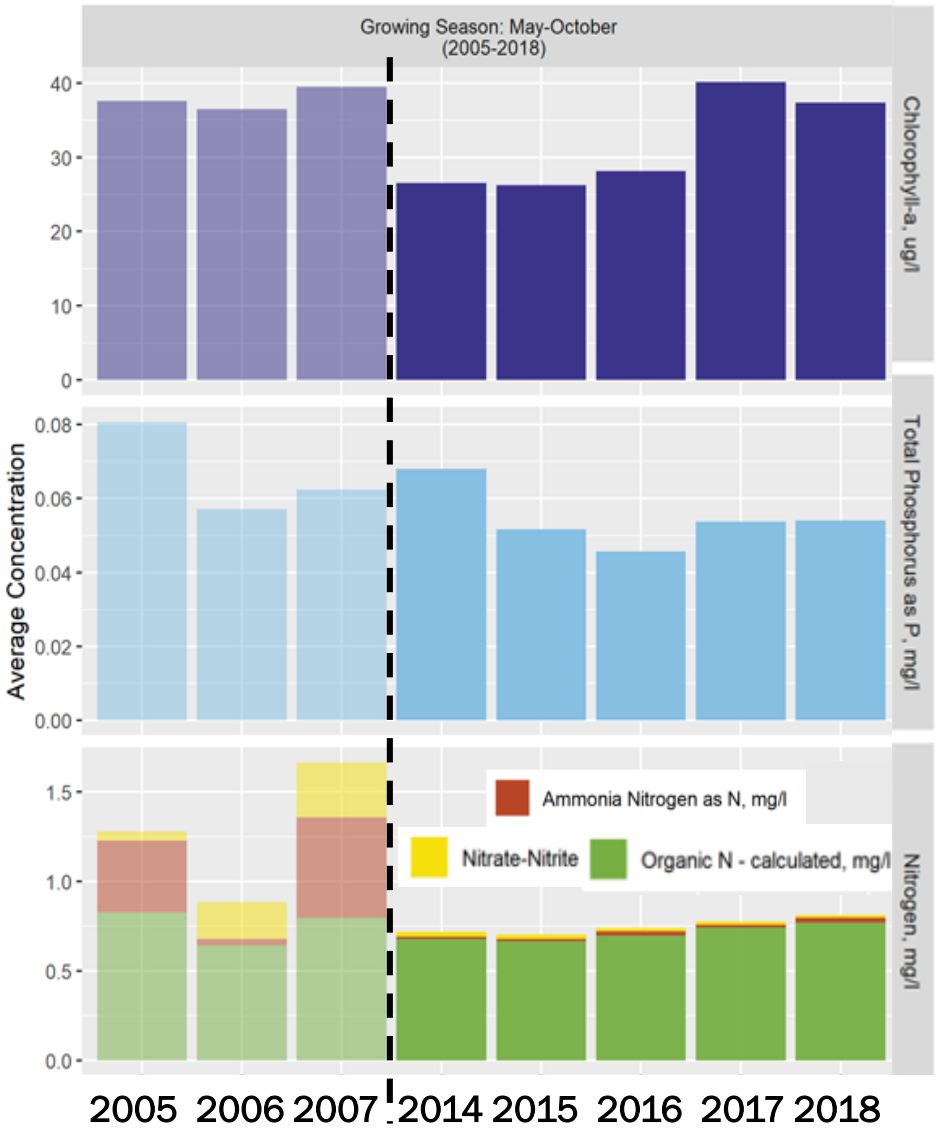
Falls Lake at I-85 in November 2007
Source: Southeast Regional Climate Center

Nutrient Loading Has Decreased Since the Baseline Period

- More rain translates into more water delivered to the lake
- However, overall loading has gone done since the baseline period (2005-2007)
  - Wastewater treatment plants
    - 88,000 pound reduction in nitrogen
    - 19,500 pound reduction in phosphorus
  - Atmospheric deposition of nitrogen has decreased
    - 38,000 pound reduction in nitrogen
- New development rules have been effective in limiting increases in loading



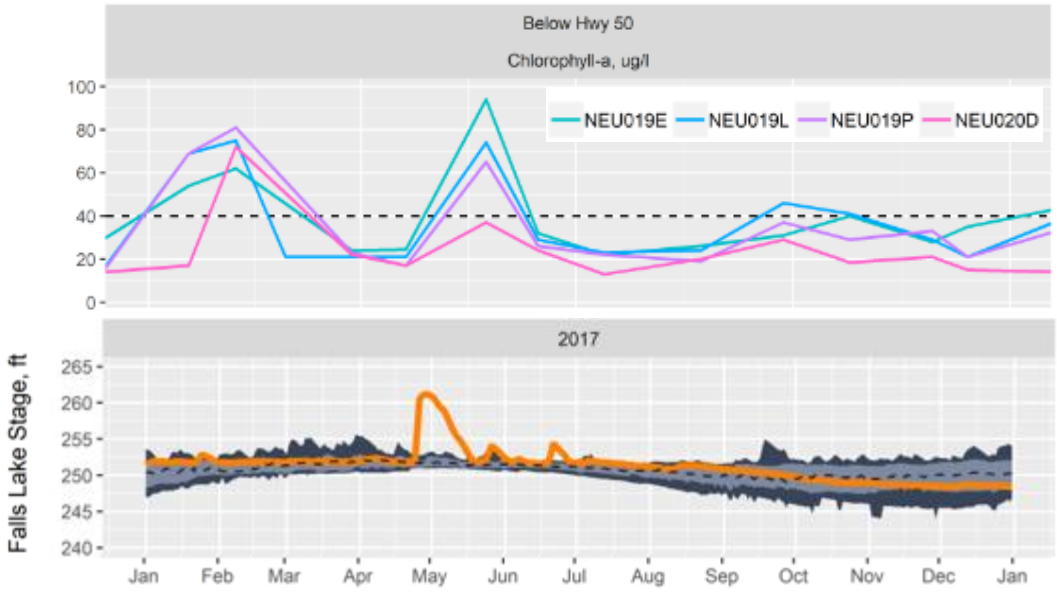
Comparison of Water Quality in Falls Lake to the Baseline Period (2005-2007)



- Growing season averages for all stations in the lake
- Baseline years are lighter
- Chlorophyll-a concentrations (top panel)
  - Similar to or lower than baseline period
  - 2017 was the highest for the recent period
- Total phosphorus concentrations (middle panel)
  - Similar to or lower than baseline period
- Total nitrogen concentrations (lower panel)
  - Consistently lower than baseline

How was 2017 Different than the Other Recent Monitoring Years?

- Fall 2016 had two very large storms (Hermine and Matthew)
- Lake levels were relatively constant on 2017
- Residence time was high except after the spring rains in 2017
- Nutrient loading to the lake was **lower** in 2017 compared to 2018
  - Total nitrogen load was 46 percent lower
  - Total phosphorus load was 52 percent lower
- Chlorophyll-a concentrations compared to other UNRBA monitoring years
  - Above Highway 50 - similar to other years
  - Below Highway 50 - much higher

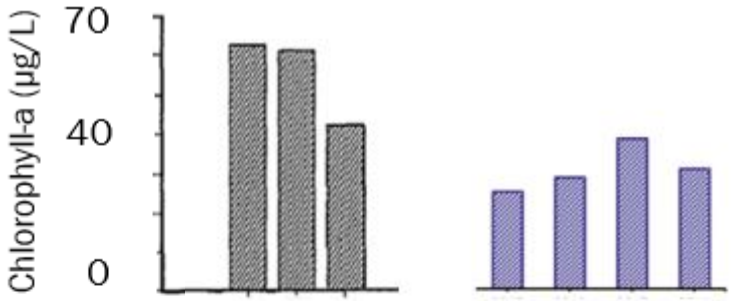


Comparison of Recent Water Quality in Falls Lake to the early 1980s (Post Filling)

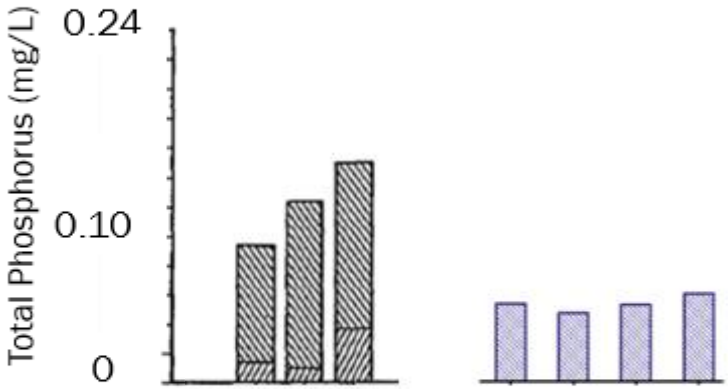
- Similar comparisons can be made using data from the 1980s
- Nutrient loads to the lake from three tributaries with data collected in both periods have decreased
  - Total nitrogen loads decreased by ~60 percent
  - Total phosphorus loads decreased by ~90 percent
  - The total discharge from these three tributaries was approximately 50 percent higher in 2018 compared to 1983
- Water quality in the lake has improved as a result

Average Warm Season (April – October) Water Quality in Falls Lake

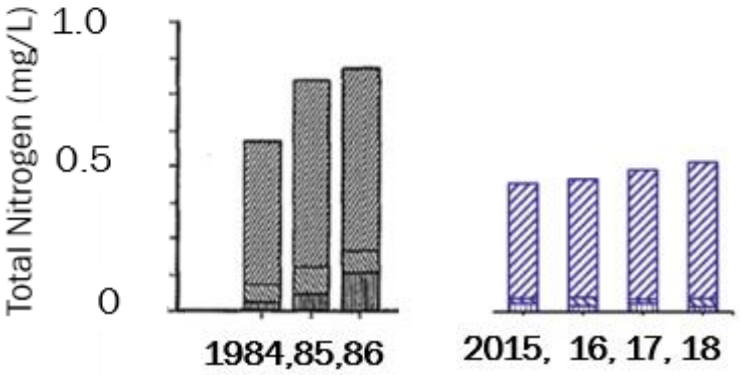
Chlorophyll-a



Total Phosphorus



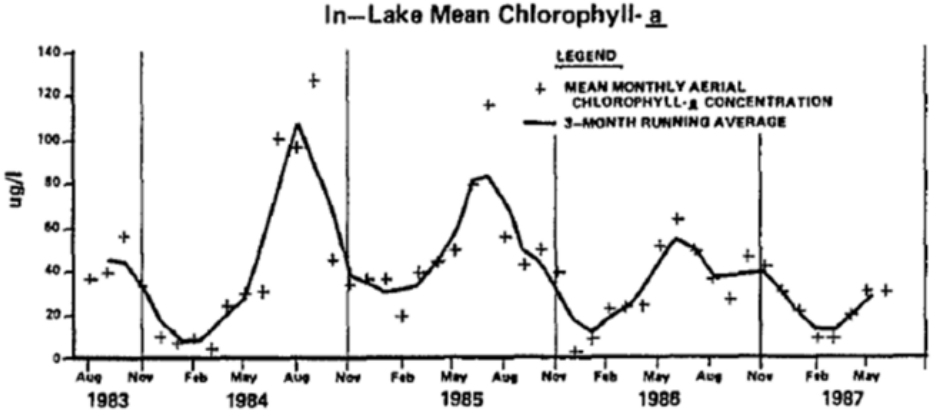
Total Nitrogen

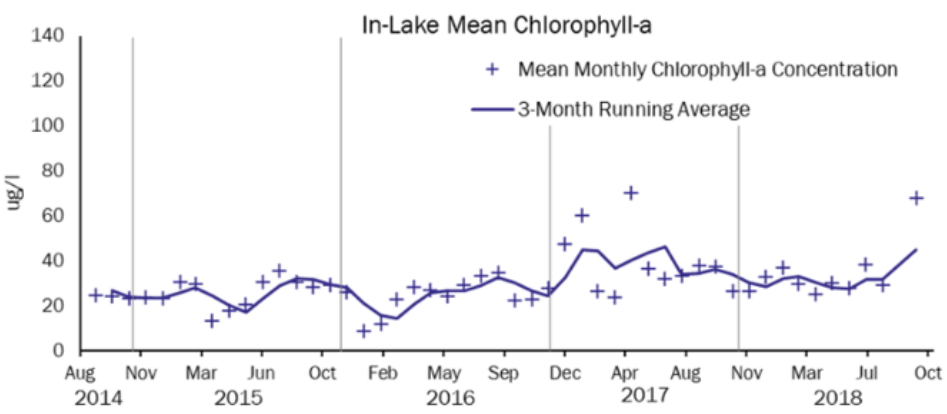


Concentrations of all three parameters in Falls Lake are lower now than after the lake was filled.

Comparison of Recent Water Quality in Falls Lake to the early 1980s (Post Filling)

- Similar comparisons can be made using data from the 1980s
- Water quality in the lake has improved

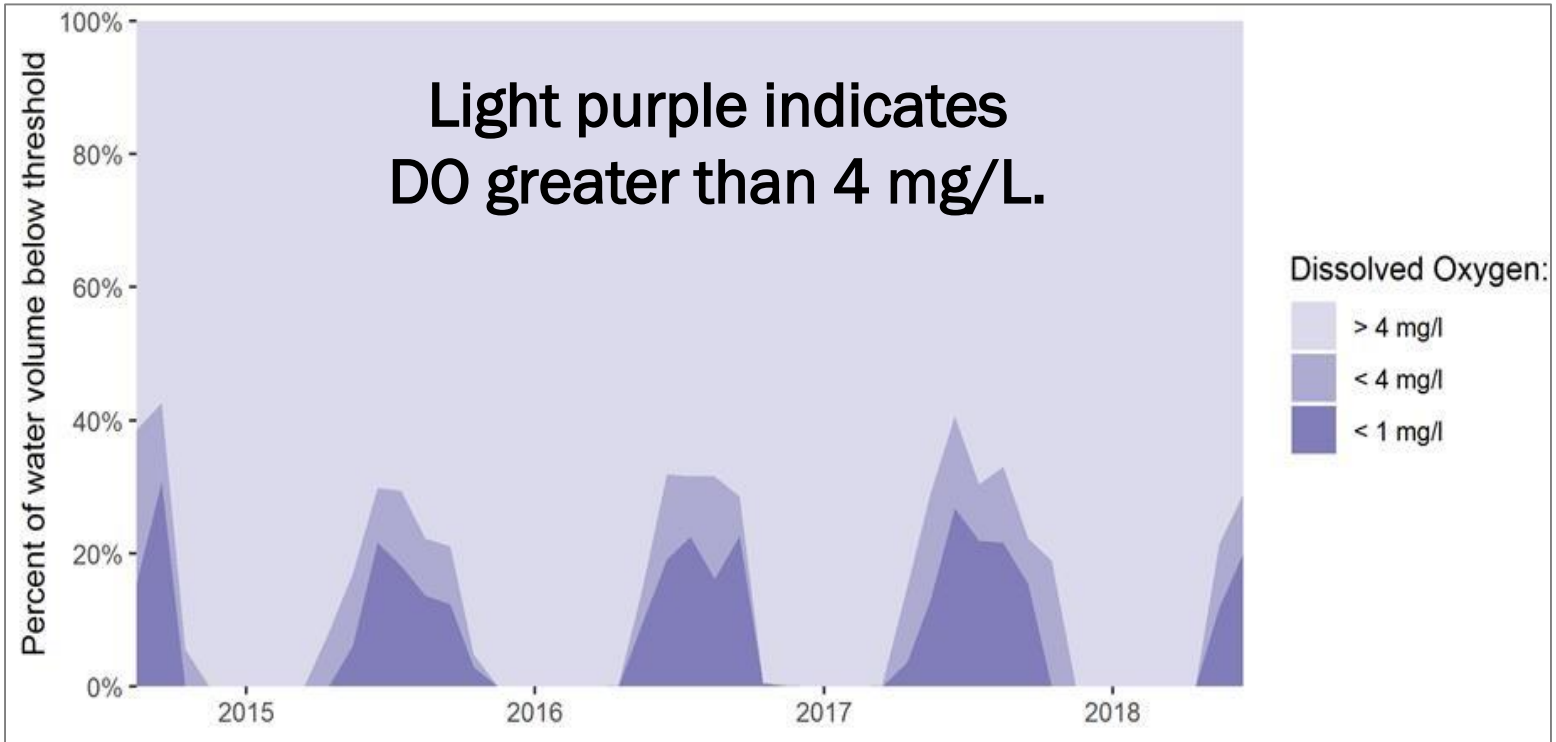




Average chlorophyll-a concentrations in the lake were higher in the during the 1980s (left) compared to the more recent monitoring period (right).

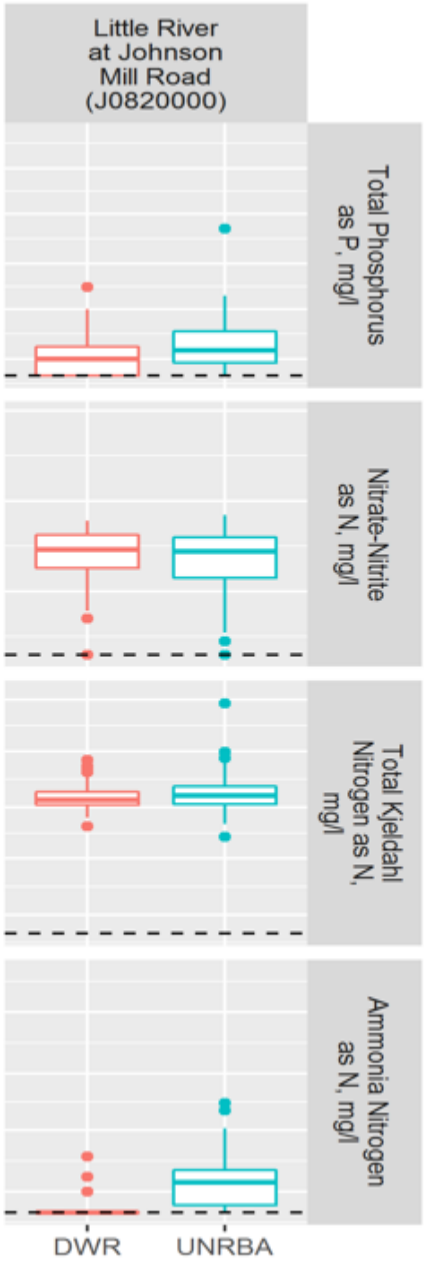
Evaluation of Oxygen Data in Falls Lake

- Dissolved oxygen (DO) is needed to sustain aquatic life
- Low levels can cause aquatic stress
- During the winter months, DO is greater than 4 mg/L throughout the water column
- In the summer months, the deepest parts of the lake in the historic river channel can experience low DO
- This is a common observations for lakes and reservoirs



Transition Monitoring

- For FY2019 contract, continue with Transition Monitoring
  - Supports adaptive management
  - Manages risk in the event of high chlorophyll-a concentrations in the lake as were seen in 2017
- Revisit Transitioning Monitoring for FY2020
- Rely on data from other organizations (e.g., DWR) for stations not included in the Transition Monitoring
- Annual Report compares the DWR and UNRBA tributary monitoring data
  - For most parameters, results are very similar
  - Differences occur with very low levels of ammonia which are difficult to measure



Ongoing DEQ Discussion/Issues

Ongoing DEQ Discussion

- Clean Water Act 305(b) and 303(d) evaluations of Falls Lake
- Memorandum of Understanding / Agreement
- Credit for land conservation
- Revision of the chlorophyll-a water quality standard
- Optional implementation approach

Coordination with the UNC Collaboratory

Meeting with the UNC Collaboratory May 16th

- Previously discussed at PFC meeting on May 13, 2019
- Input provided by the PFC on May 13th
  - Develop cost benefit analysis tools to enhance the quality and confidence of any fiscal analysis.
  - UNC appreciative w/ possibilities including Dr. Gregory W. Characklis, Director, Center on Financial Risk in Environmental Systems.
- UNRBA provided list of potential research projects
- Collaboratory indicated they would take UNRBA input into consideration
- Focus their discussions by mid-June with potential funding in early August

Optional Falls Lake Implementation Approach

Status

- Concept was discussed with DEQ during the June 7th meeting
- Both the State and environmental groups are supporting of further consideration of this approach
- PFC will continue to work through the potential details at upcoming meetings
- Board will be updated in September
- Early 2020 is the target for providing recommendations to the Board

Communications Support Status

Communications Support Status

- HDR has developed a timeline that can be used to show progress on the UNRBA's efforts to complete the re-examination.
  - The Executive Director and PFC have reviewed
  - Input from the Board is appreciated
- A Media Engagement Protocol has been drafted and distributed to the Communications Workgroup
- Progress has been made on all work products required under the 2019 contract
  - A UNRBA Stakeholder Summit to be held in the fall
  - Media management protocol
  - Elected official orientation package
- A contract modification is underway to support development of a decision methodology or framework by the UNRBA

Fast Facts and Infographic

- The UNRBA fast facts and infographic are available for review on the Resource Library page.
- If you use any of these presentation materials, please complete the communication tool use tracking survey : https://www.surveymonkey.com/r/UNRBA.

Closing Comments

Next UNRBA Board Meeting is Scheduled for September 18, 2019 Butner Town Hall 9:30 AM to Noon