

UNRBA  
Monitoring Program  
BOD Meeting  
November 2015





## Routine Monitoring - Data Collection Status

| Date     | Sample Collection | Sample Analysis | Data Review | Posted to Database |
|----------|-------------------|-----------------|-------------|--------------------|
| Aug-2014 | ✓                 | ✓               | ✓           | ✓                  |
| Sep-2014 | ✓                 | ✓               | ✓           | ✓                  |
| Oct-2014 | ✓                 | ✓               | ✓           | ✓                  |
| Nov-2014 | ✓                 | ✓               | ✓           | ✓                  |
| Dec-2014 | ✓                 | ✓               | ✓           | ✓                  |
| Jan-2015 | ✓                 | ✓               | ✓           | ✓                  |
| Feb-2015 | ✓                 | ✓               | ✓           | ✓                  |
| Mar-2015 | ✓                 | ✓               | ✓           | ✓                  |
| Apr-2015 | ✓                 | ✓               | ✓           | ✓                  |
| May-2015 | ✓                 | ✓               | ✓           | ✓                  |
| Jun-2015 | ✓                 | ✓               | ✓           | ✓                  |
| Jul-2015 | ✓                 | ✓               | ✓           | ✓                  |
| Aug-2015 | ✓                 | ✓               | ✓           | ✓                  |
| Sep-2015 | ✓                 | ✓               | ✓           | ✓                  |
| Oct-2015 | ✓                 | ✓               |             |                    |
| Nov-2015 | ✓                 |                 |             |                    |
| Dec-2015 |                   |                 |             |                    |

# Interim Report





## Interim Report

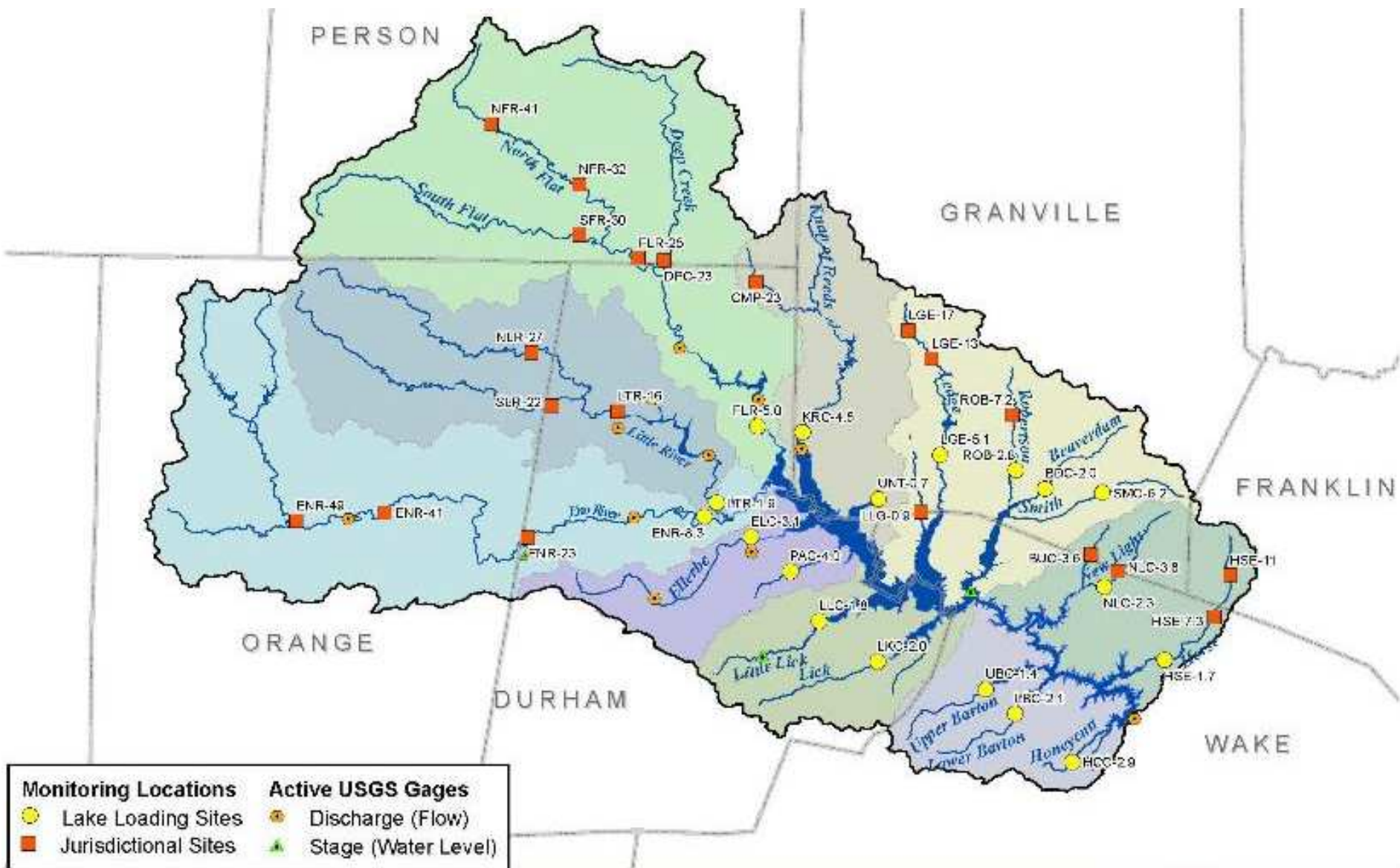
- Posted on the UNRBA website
- Focuses on efforts through June 2015 (FY2015)
- Includes
  - Review of monitoring program status and data collection efforts
    - Routine Monitoring
    - Special Studies
  - Preliminary exploration of the data
  - Focuses on tributary data; lake data will be included in annual report
- With just 11 months of data, it is premature to draw extensive conclusions

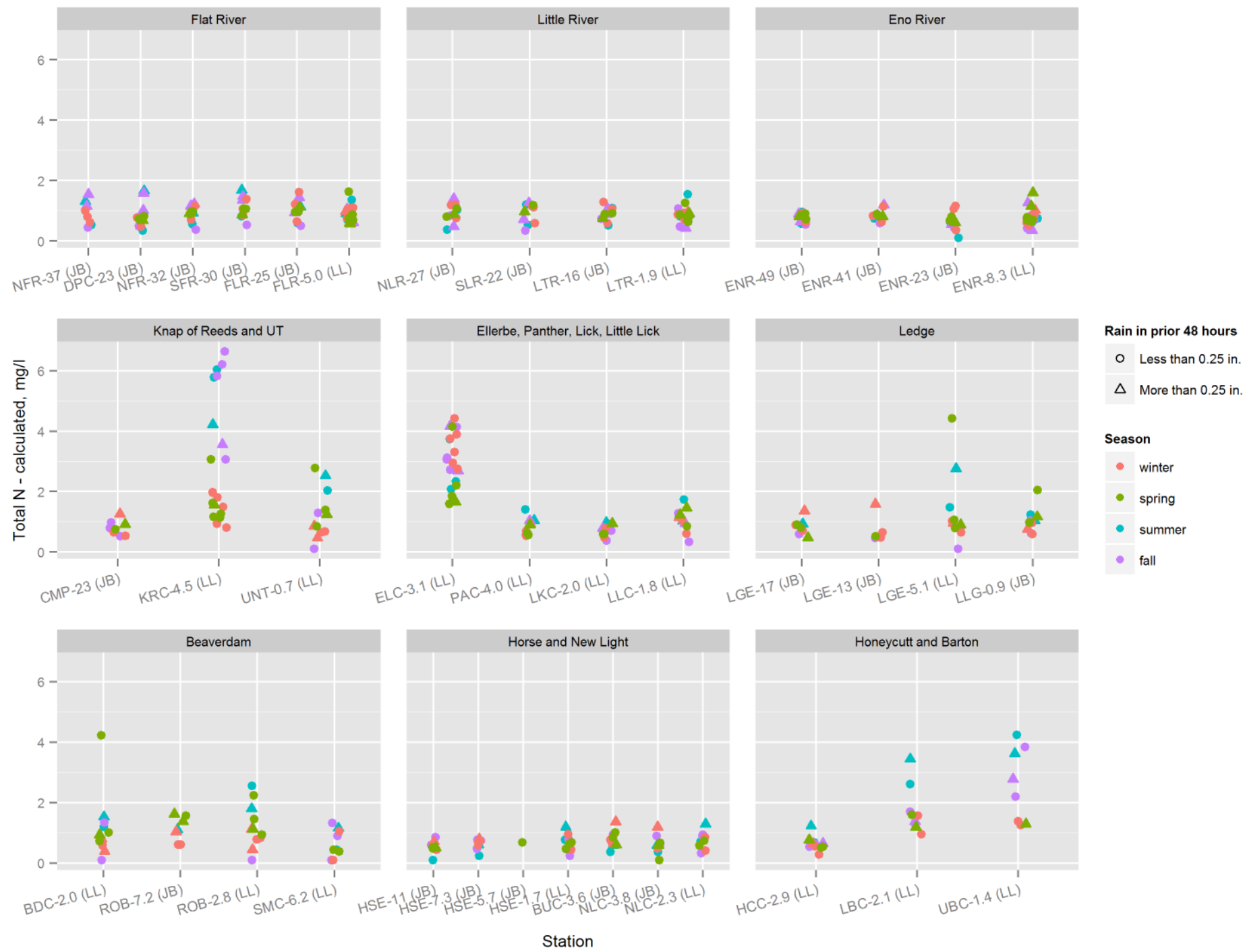


## Routine Monitoring

- Repeated testing of water quality at fixed locations.
- Yields insight into seasonal and spatial variation of nitrogen, phosphorus, and other parameters.
- Provides data for water quality modeling.









## Total Nitrogen

- Observed patterns:
  - Higher values and variability downstream of WWTPs
  - Higher values and variability in wetland-dominated sites

## Total Phosphorus

- Patterns not as evident
  - No clear link to WWTP influence.
  - May be higher at sites with wetlands and low flows.

## Total Organic Carbon

- Higher and more variable at wetland sites with low flows

## Chlorophyll a

- Values generally less than 10 ug/l
  - (Standard is 40 ug/L)



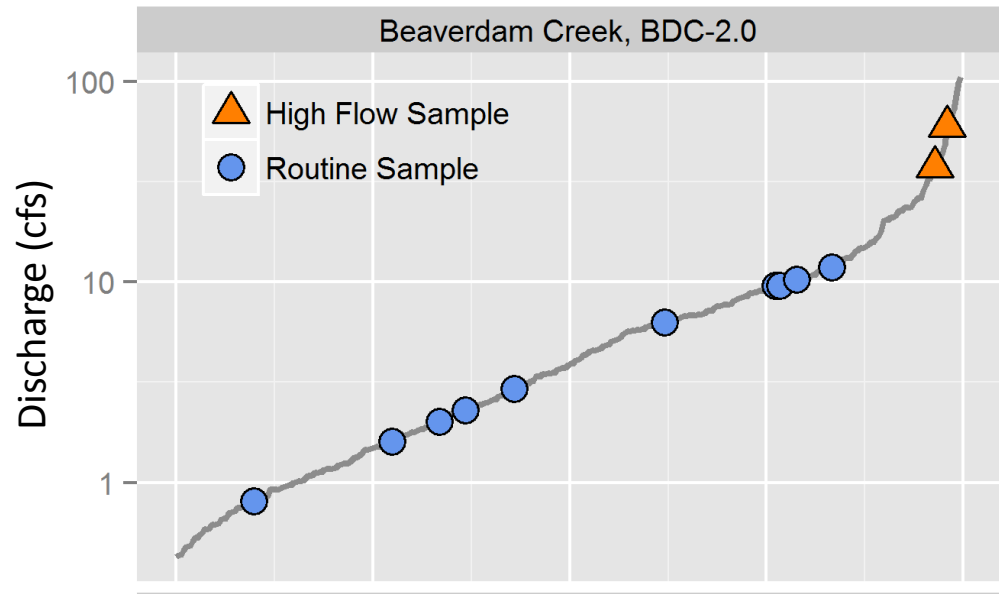
# Special Studies

- Focused data collection efforts to inform modeling to more accurately simulate baseline and management water quality scenarios
- Three Special Studies initiated in FY2015:
  - High Flow Sampling,
  - Storm Event Sampling,
  - Sediment Evaluation



## High Flow Sampling

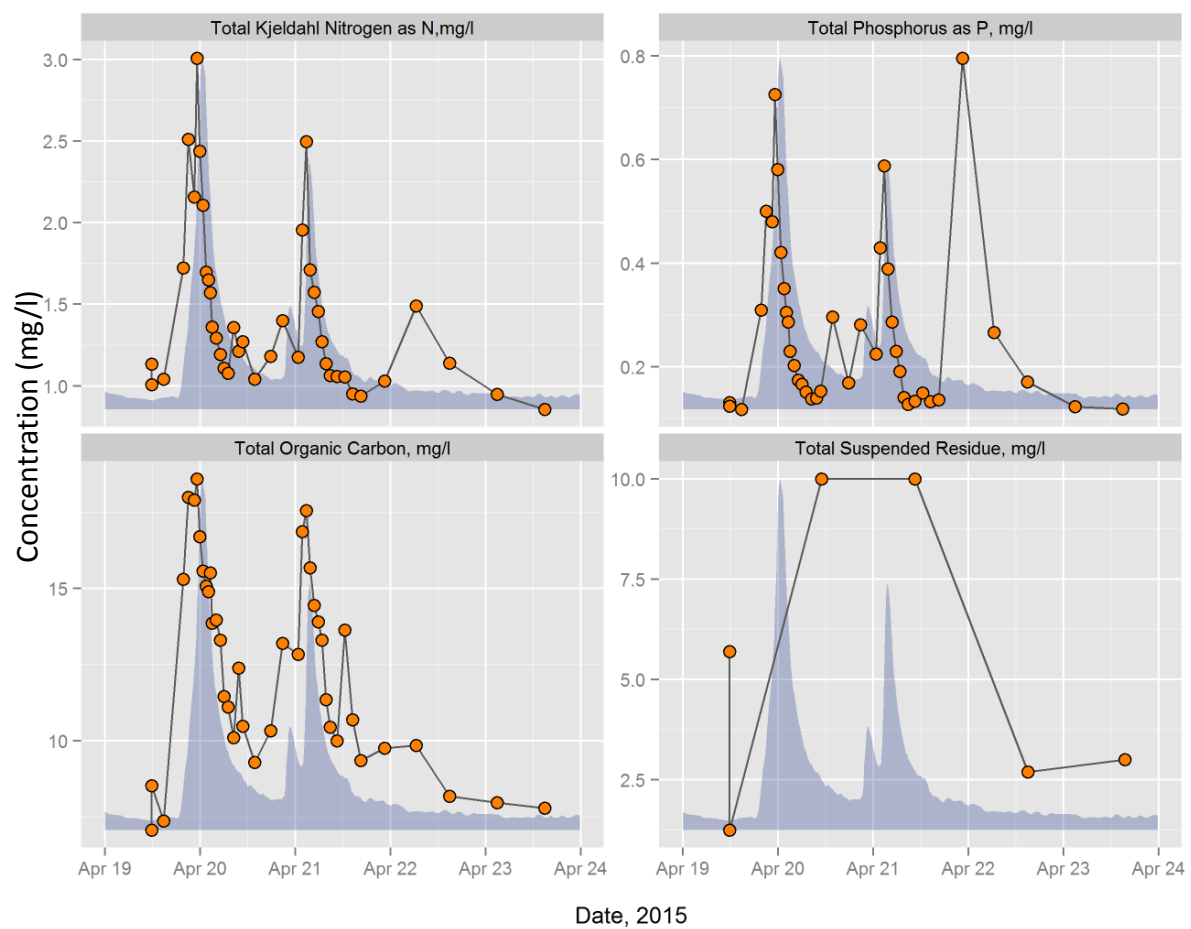
- Two events captured so far.
- Some stations show lower concentrations with elevated flow (e.g. chlorophyll *a* in wetland sites), while others seem to have elevated concentrations with elevated flow.
- Sample size is low; too early to draw firm conclusions
- Will continue to sample high-flow events to evaluate the relationships between flow and water quality.



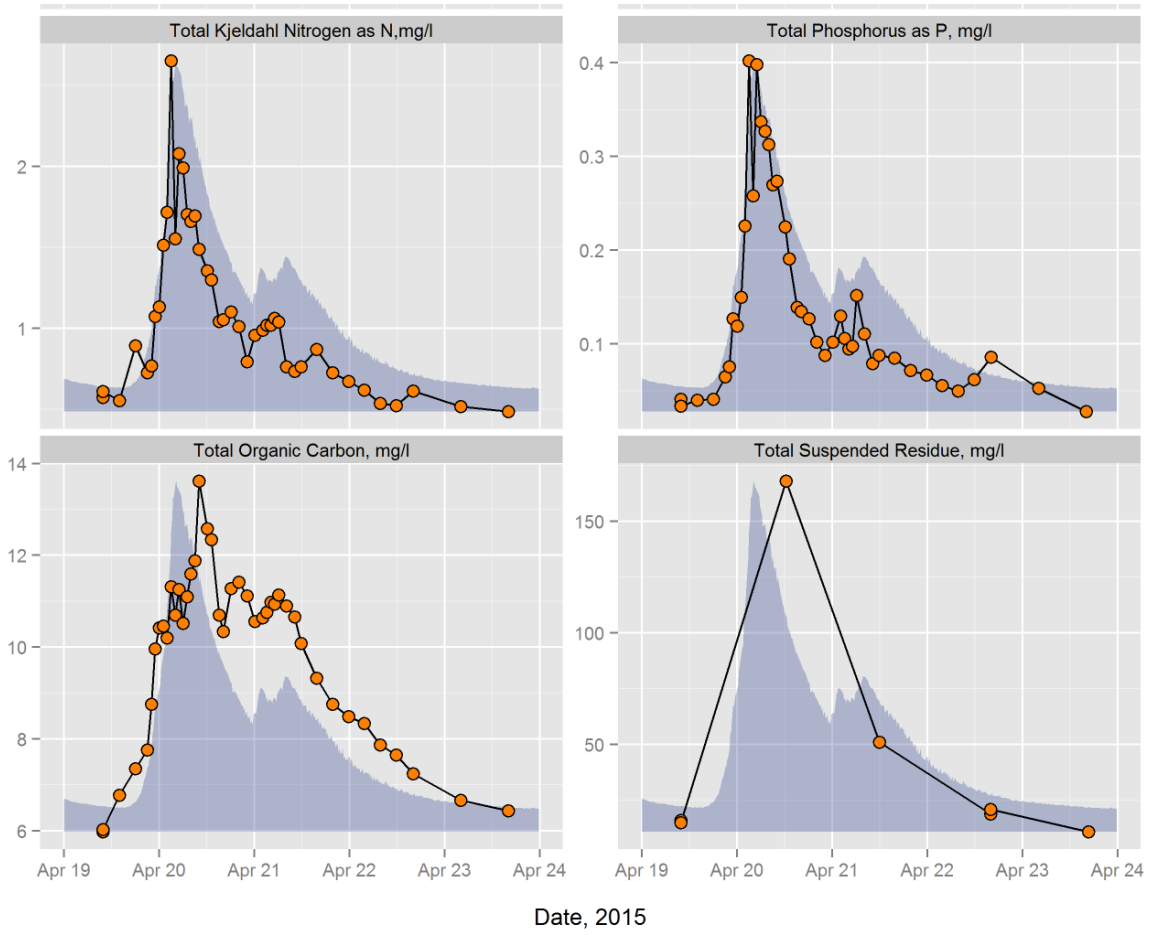
proportion of year with daily flow less than the value at left  
August 2014 – June 2015

# Storm Event Sampling

- Two storms sampled on two streams in April.
- Nutrient concentrations clearly increased with flows
- More storms sampled in October & November
- Additional sampling planned for winter & spring









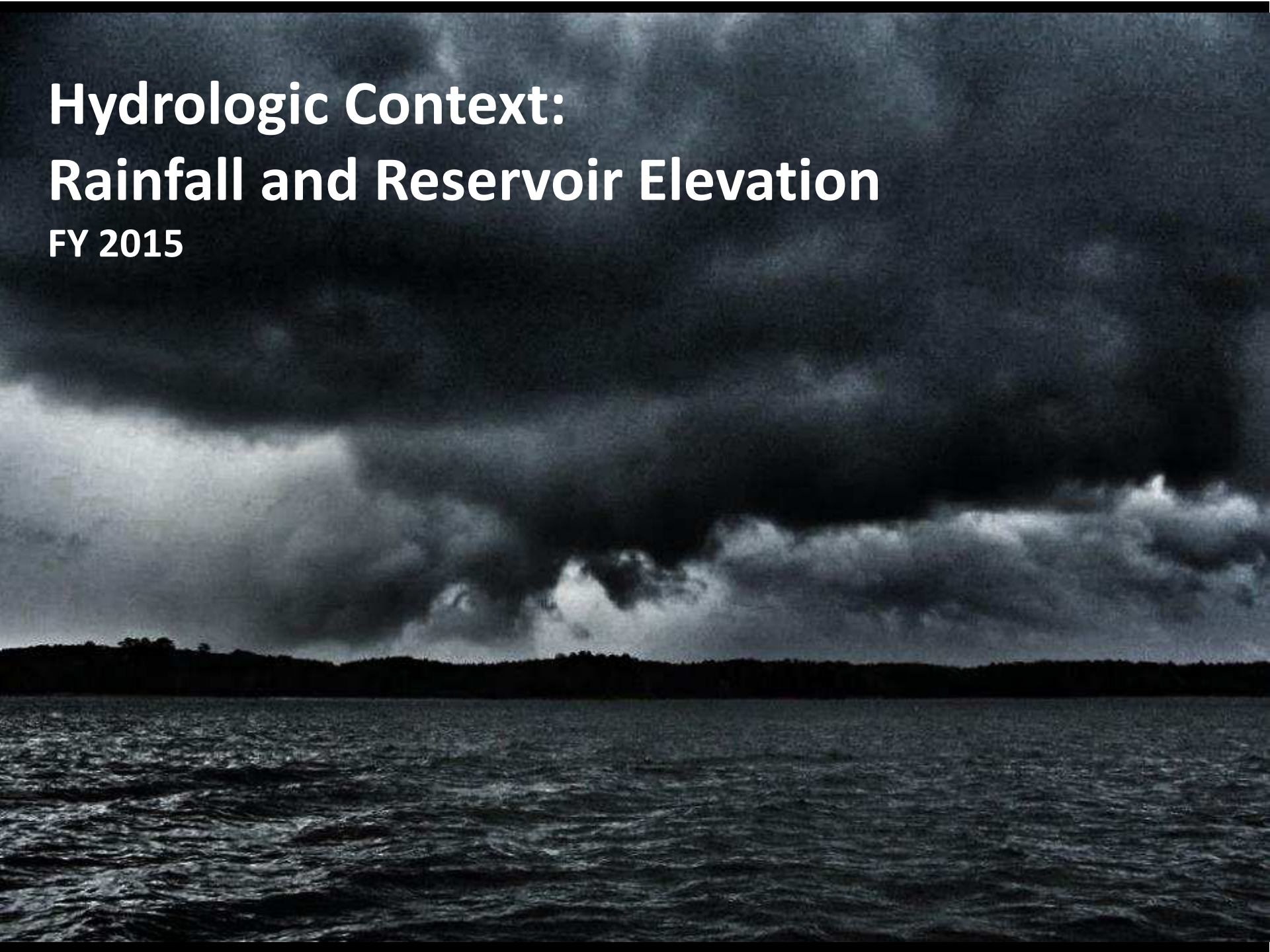
## Lake Sediment Evaluation

- Quantify the nutrient and organic carbon content of sediment samples
- Improve understanding of spatial variability of sediment and nutrient flux rates
- Quantify internal nutrient load potential
- Samples collected in Summer 2015
- Results to be presented in Annual Report.



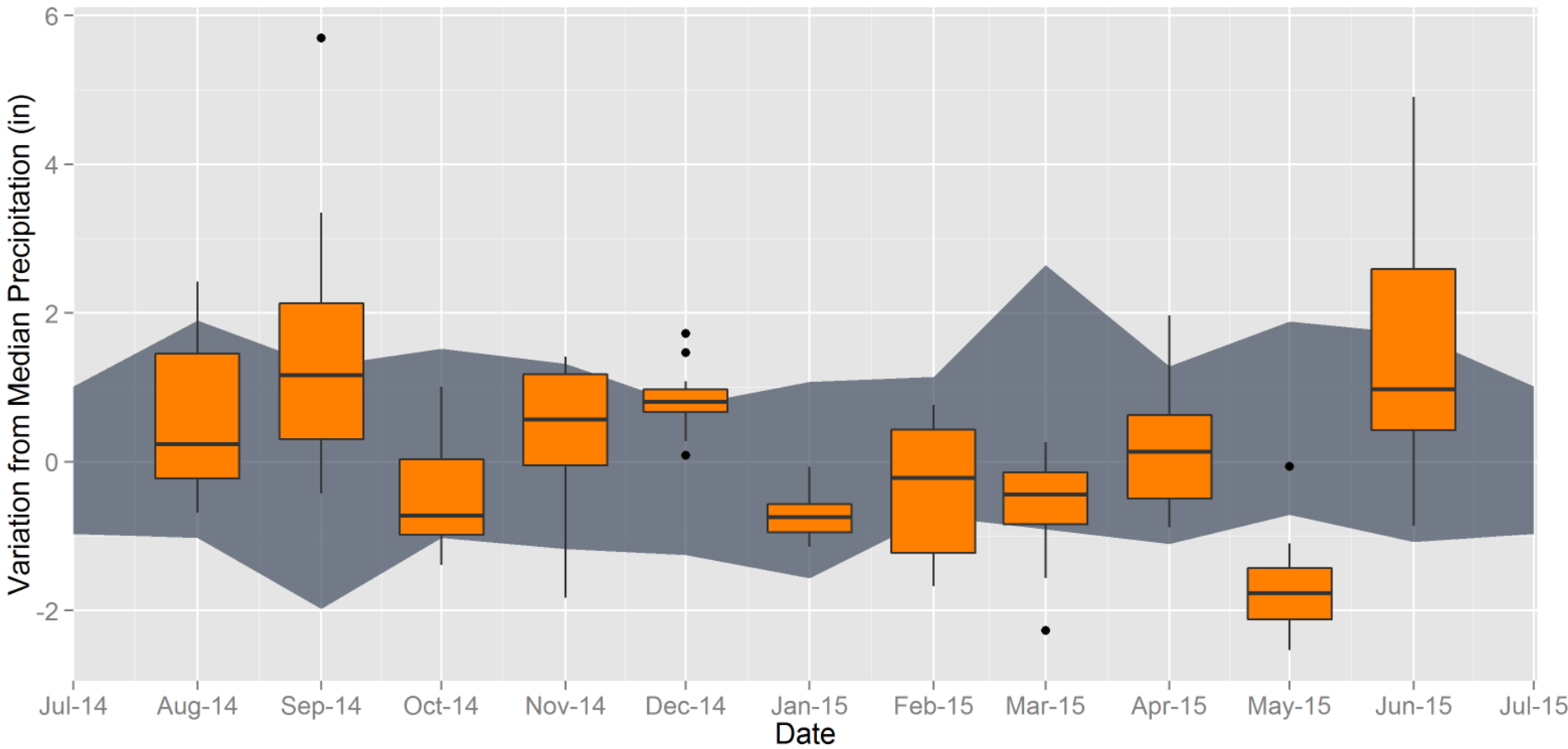


# Hydrologic Context: Rainfall and Reservoir Elevation FY 2015





Precipitation across the Upper Neuse Watershed Compared to Previous 30 Years





### Falls Lake Elevation Compared to Previous Years

