Welcome

Illinois River Watershed
Total Phosphorus Criterion Revision

Stakeholder Webinar 1

September 8, 2020

OWRB
the water agency

Webinar Logistics

Questions

- ✓Type all questions into the “Q & A” toolbar. Q & A will be held at 3 break points during the presentation.

- ✓A recording and copy of the presentation will be posted on OWRB website

http://www.owrb.ok.gov/

OWRB the water agency

OWRB Staff Introductions

- **Bill Cauthron**, Water Quality Division Chief
- **Monty Porter**, Water Quality Division Assistant Chief & WQS Coordinator
- **Rebecca Veiga Nascimento**, WQS Environmental Program Manager
- **Jade Jones**, WQS Environmental Specialist III

Illinois River Watershed TP Criterion Revision

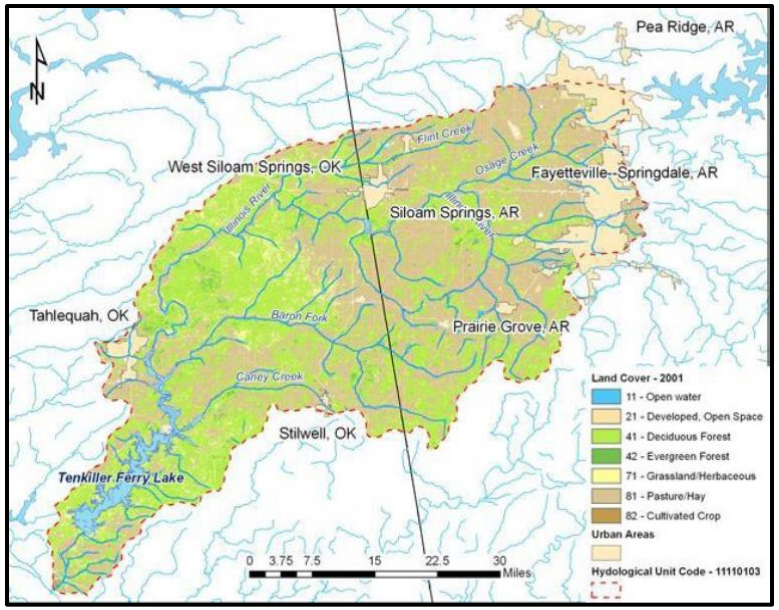
Stakeholder Webinar
September 8, 2020

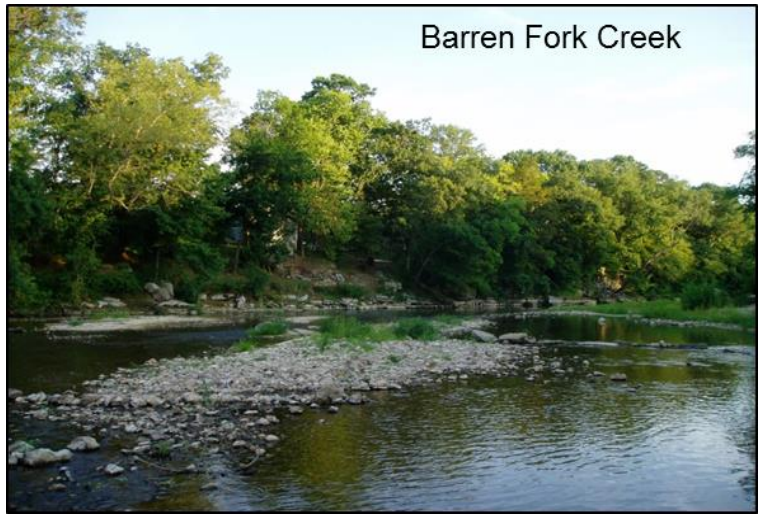
OWRB
the water agency

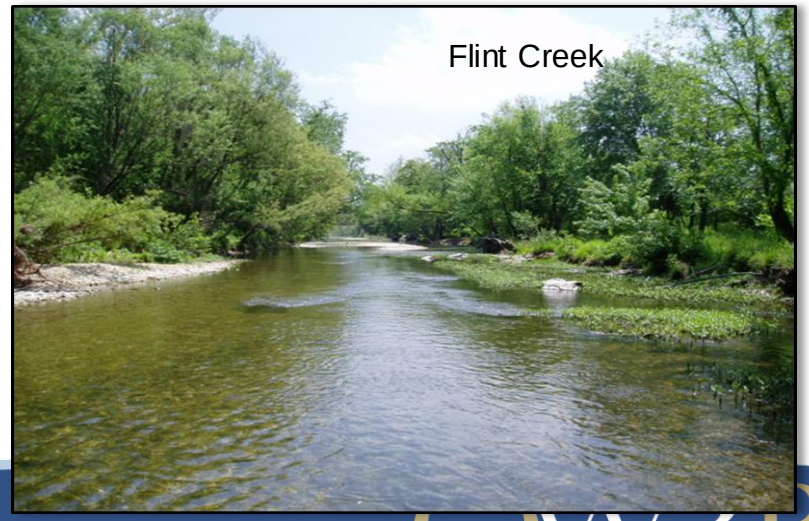
Outline

- Background
- Draft revised total phosphorus criterion
- **Question Break 1**
- Critical Condition
  - Total Flow
  - Ecosystem Process
- **Question Break 2**
- Calculating 6-month average
- Rulemaking Process
- **Final Questions**

Illinois River Watershed







Scenic Rivers

OWRB
the water agency

Beneficial Uses

OWRB
the water agency

Aesthetic Beneficial Use

Illinois River at Watts

History: Total Phosphorus Criterion

2002
Scenic River TP Criterion Adopted

- 0.037 mg/L, 30-day geo-mean

2003
1st Statement of Joint Principles

- OK & AR agreed to coordinated, but individual state actions to reduce phosphorus

2012
Re-evaluation TP Criterion

- Technical re-evaluation of phosphorus criterion
- Technical Advisory Group (TAG), OK confirmed the Scenic River TP criterion
- AR TAG members drafted minority report

2013
2nd Statement of Joint Principals

- Reconcile differences regarding TAG findings
- Formed Joint Study Committee
- Special Study on phosphorus & algae growth conducted

2018
MOA

- OK & AR working together on various actions to improve water quality

2013 Second Statement of Joint Principals

Formed 6-person Joint Study Committee

Responsible for overseeing study on phosphorus & algae

June 2014 - April 2016, Ryan King with Baylor University conducted study

December 2016, Committee Final Report & Recommendations accepted by both state Governors

OWRB staff & partners working to address committee recommendations

Joint Committee Recommendations

- 2 Recommendations
  1. Water quality criteria
  2. Ambient water quality monitoring

Criteria

A six-month average total phosphorus level not to exceed 0.035 mg/L based on water samples taken during the CRITICAL CONDITION

Monitoring

OWRB
the water agency

Interagency Cooperation

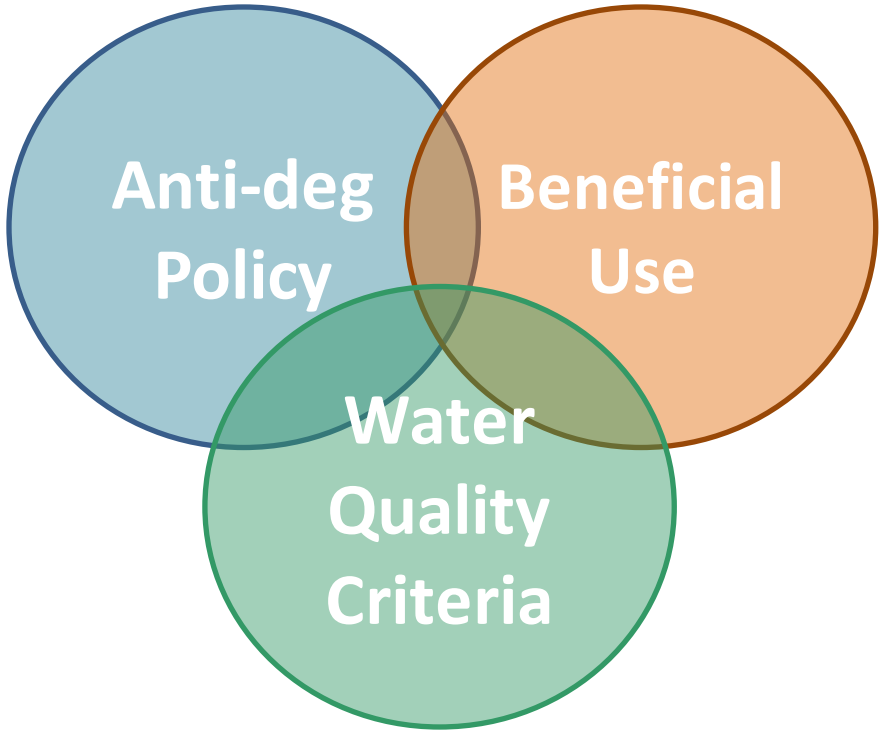
OK Agencies & Tribal Partners

- Extensive technical & general information meetings
  - 3 completed
  - Additional expected
- General communication & info exchange, as needed

Arkansas Division Environmental Quality

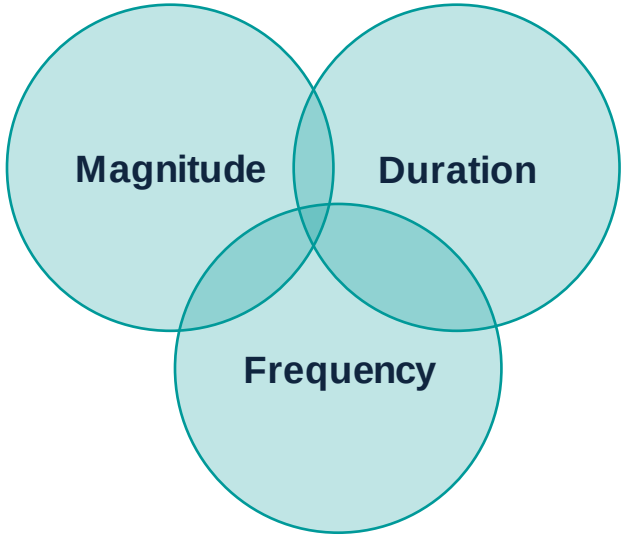
- Technical meetings, bimonthly since March 2019 & currently as needed
- General communication & info exchange, as needed
- Cooperation on stakeholder outreach

Water Quality Standard



- Beneficial Use
  - Aesthetics
- Water Quality Criterion
  - Total Phosphorus
- Antidegradation Policy
  - Scenic River
  - Outstanding Resource Water

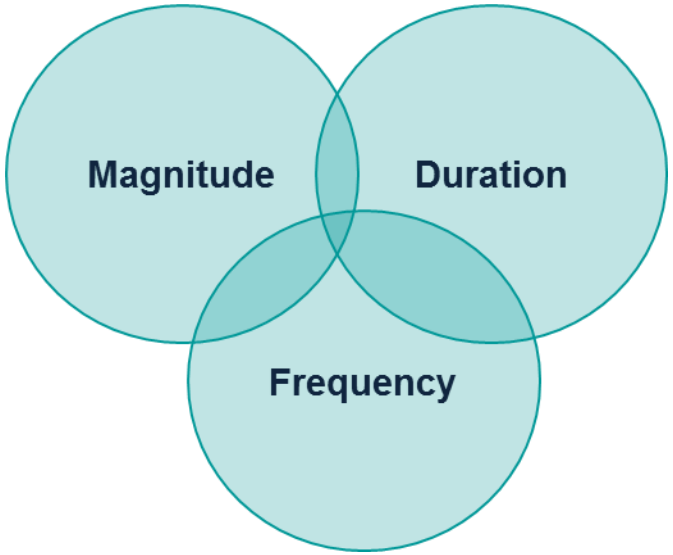
Water Quality Criteria



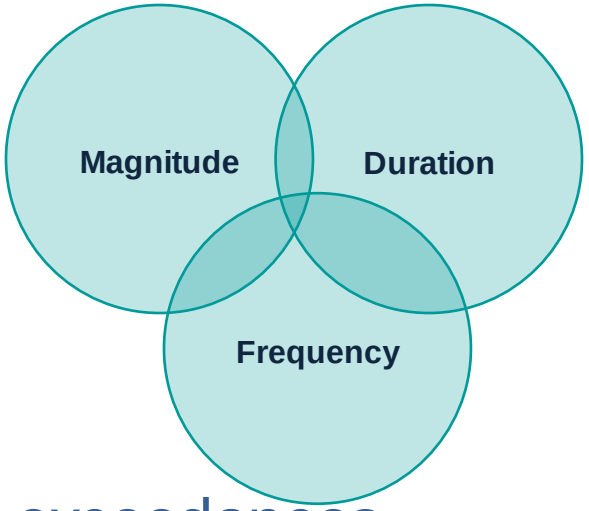
- **Magnitude**
  - Remain at 0.037 mg/L TP
  - Magnitude (0.035 mg/L TP) recommend by committee is not considered “significantly different” under the Second Statement of Joint Principals

Water Quality Criteria - Duration

- Evaluated & confirmed 6-month average with OWRB long term data sets
- 6-month average will be protective and reasonable



Water Quality Criteria



- **Frequency**
  - Committee Recommended, "*not to exceed*"
    - Waterbodies have resiliency and can withstand infrequent exceedances
    - Not effective for implementation programs
  - OWRB staff recommend limited exceedance approach with 2 components for short term & moderate term protection
    - No more than 1 exceedance per 1-year period
    - No more than 3 exceedances per 5-year period

Criteria Frequency

- Approach considers waterbody resiliency over short-term and medium-term

- Criteria with 2 frequency components

1) <u>No More than 1 exceedance per 1-year period</u>
   - Provides for annual review of waterbody condition
   - Guards against impact of multiple individual high TP values within a given 6-month average

AND

2) <u>No More than 3 exceedances per 5-year period</u>
   - Medium-term review of waterbody condition
   - Fits permitting timeframes
   - Fits OWRB WQ Assessment timeframe

Draft Criterion

The total phosphorus **six month rolling average** of **0.037 mg/L** shall not be exceeded more than **once in a one-year period** and not more than **three times in a five-year period**.

Question Break 1

Barren Fork Creek

Critical Condition

- New requirement not previously in OK Water Quality Standards
- Committee definition

"the conditions where surface runoff is not the dominant influence of total flow and *stream ecosystem processes."*

Critical Condition

"the conditions where surface runoff is not the dominant influence of total flow and *stream ecosystem processes."*

1. What does this mean?

2. We need an operational definition that can be implemented across 2 states and various monitoring programs

Critical Condition

Break critical condition language into 2 parts & created 2 analysis to consider each part

1) *the conditions where* ***surface runoff*** *is* ***not*** *the* ***dominant influence*** *of* ***total flow***

&

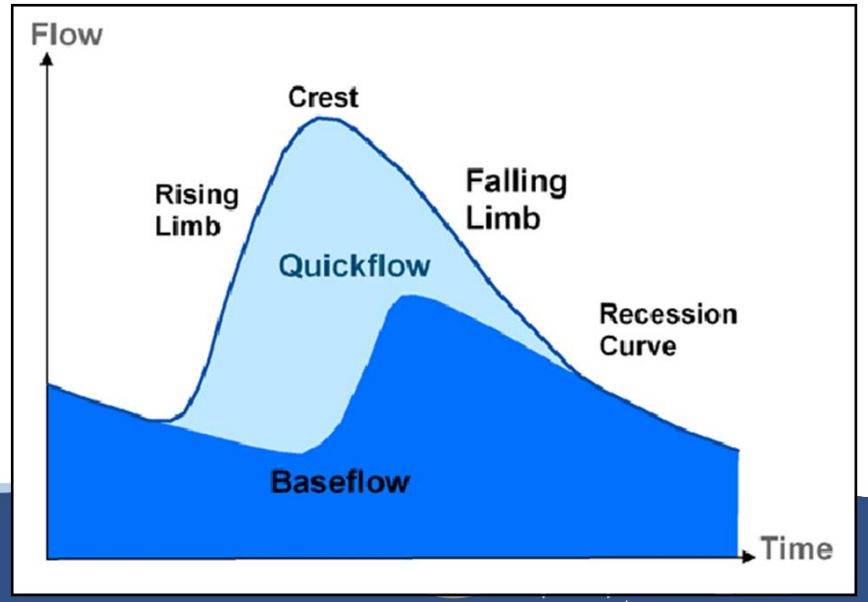
2) *the conditions where* ***surface runoff*** *is* ***not*** *the* ***dominant influence*** *of* ***stream ecosystem processes***

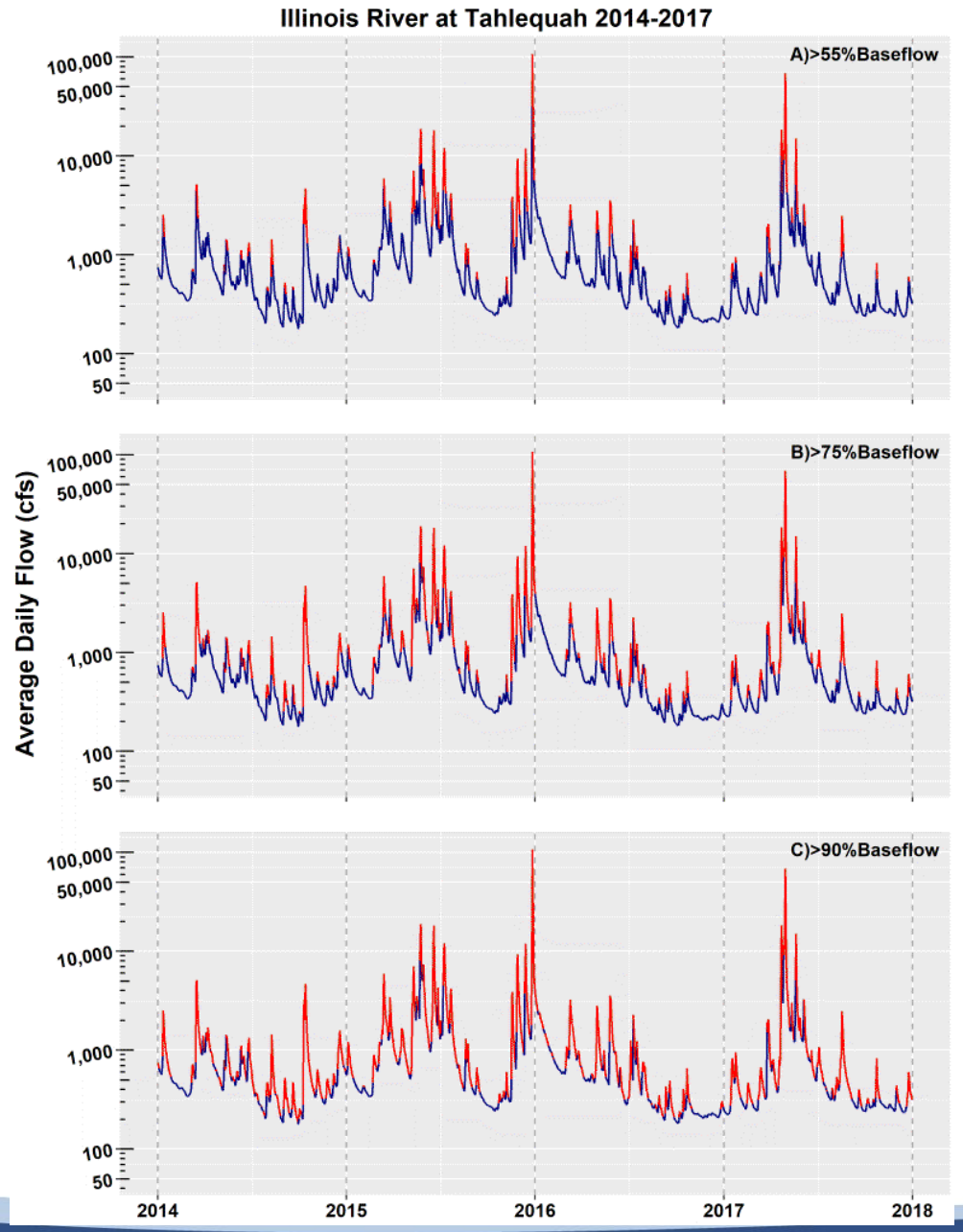
Critical Condition Analyses

1. Total Flow

Hydrograph separation analysis to evaluate flow conditions & when is surface runoff dominant and when is it not

- Effectively & efficiently identify surface runoff versus baseflow conditions
- Utilized USGS gages throughout watershed
- Consistent approach applicable watershed wide





- Where does the population of days at different baseflow percentage threshold fall on the hydrograph?

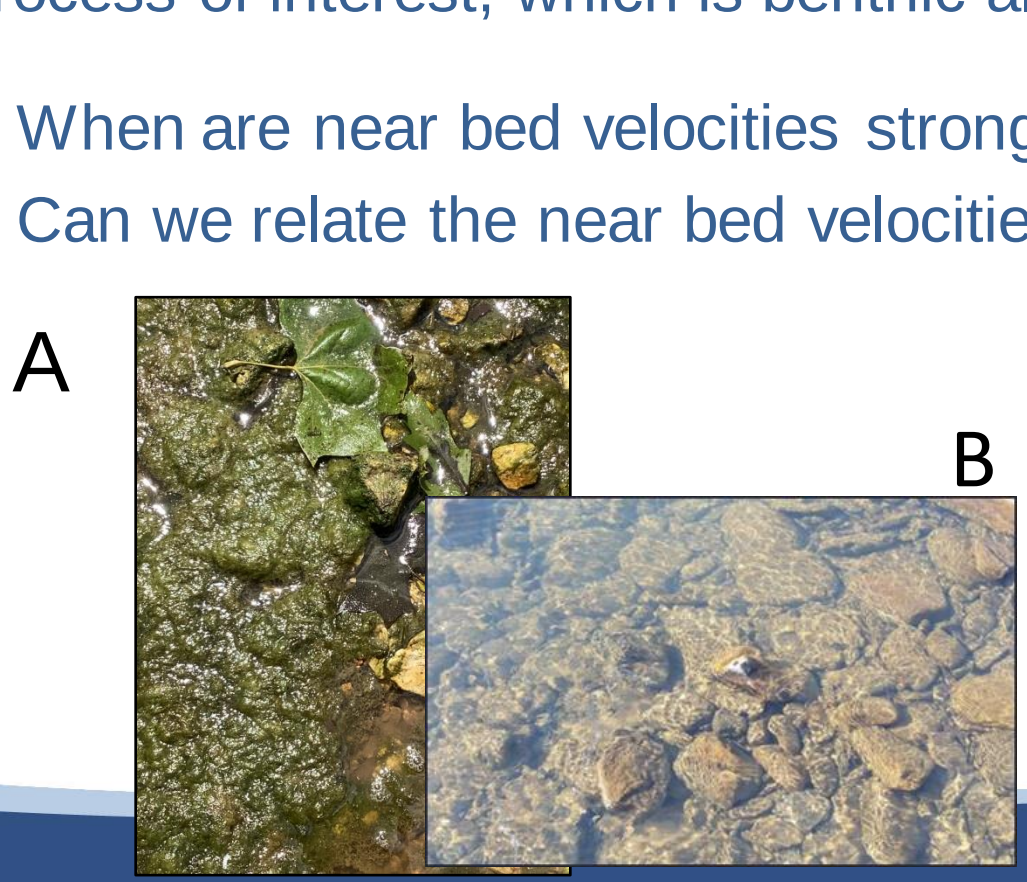
OWRB
the water agency

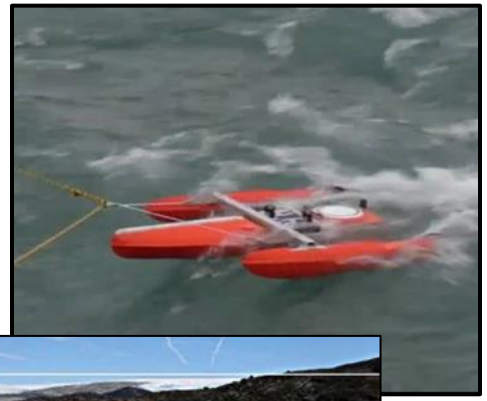
Critical Condition Analyses

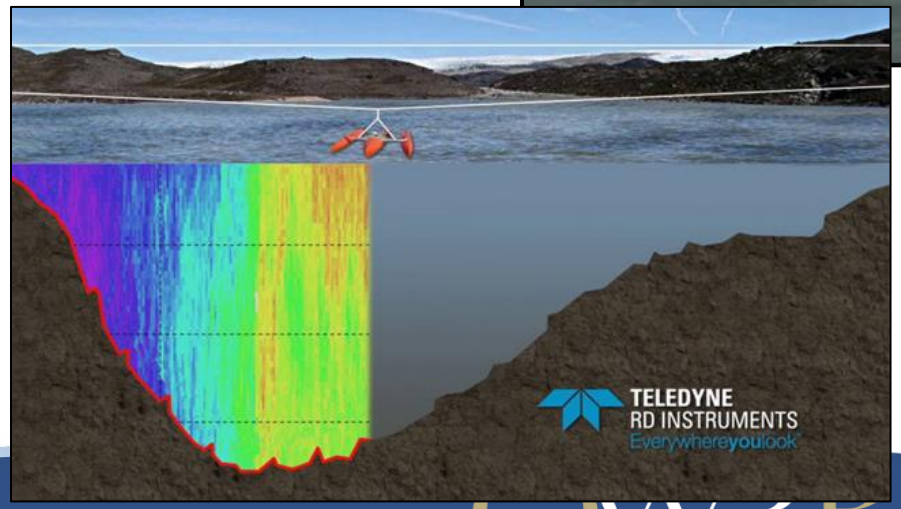
2. Stream Ecosystem Process

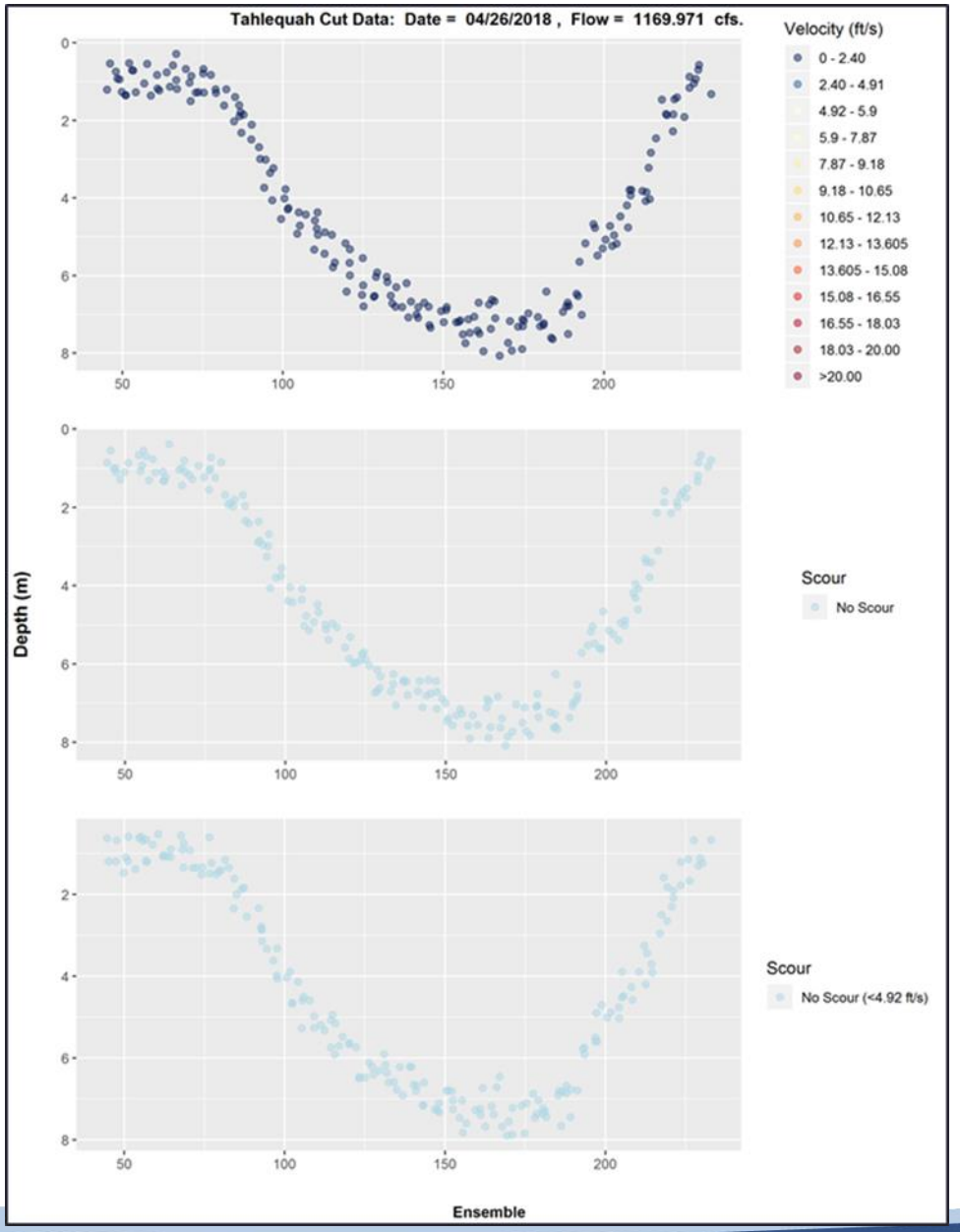
Hydrology scour analysis to determine when flow dominates ecosystem process of interest, which is benthic algal growth

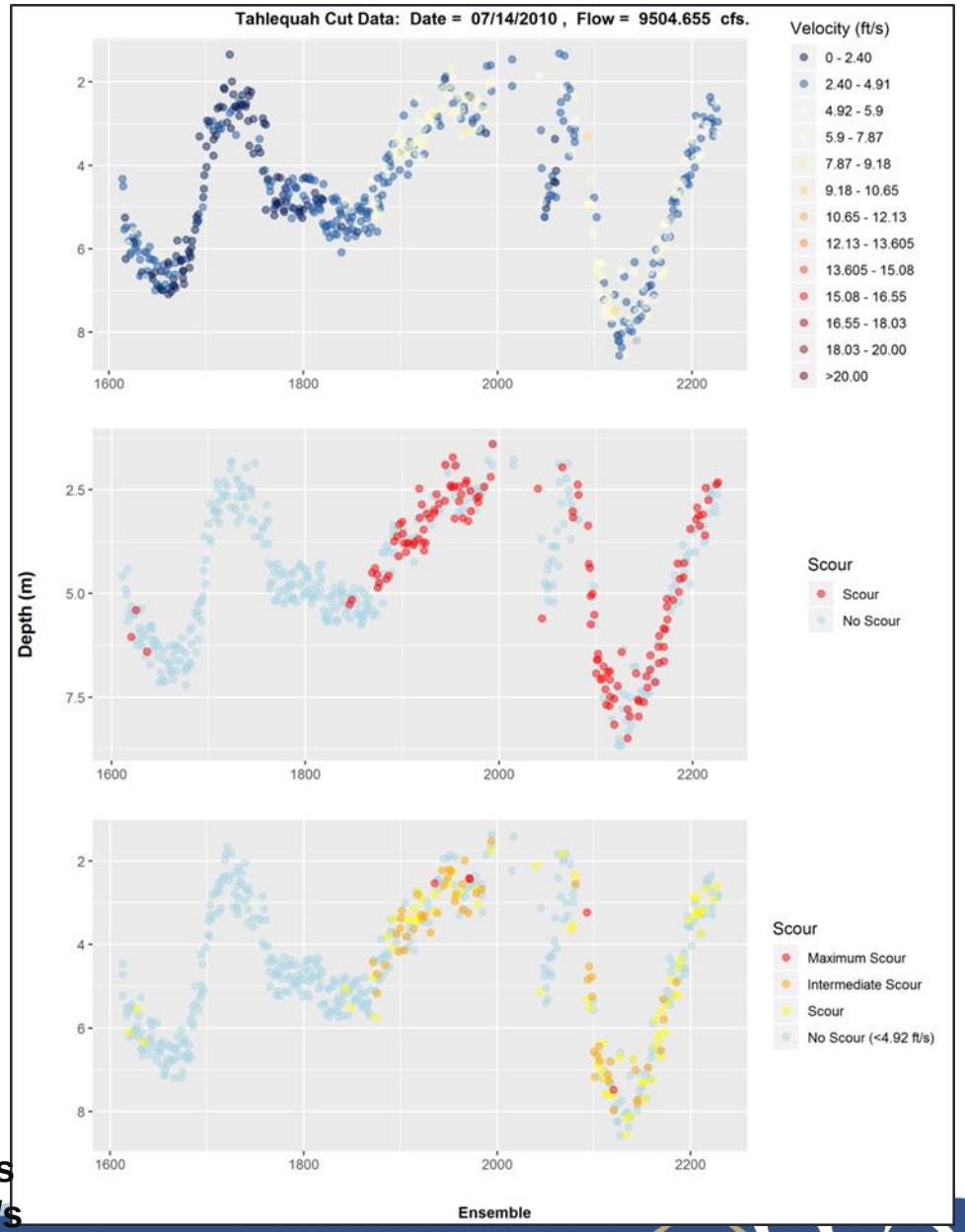
- When are near bed velocities strong enough to scour algae?
- Can we relate the near bed velocities to discharge?





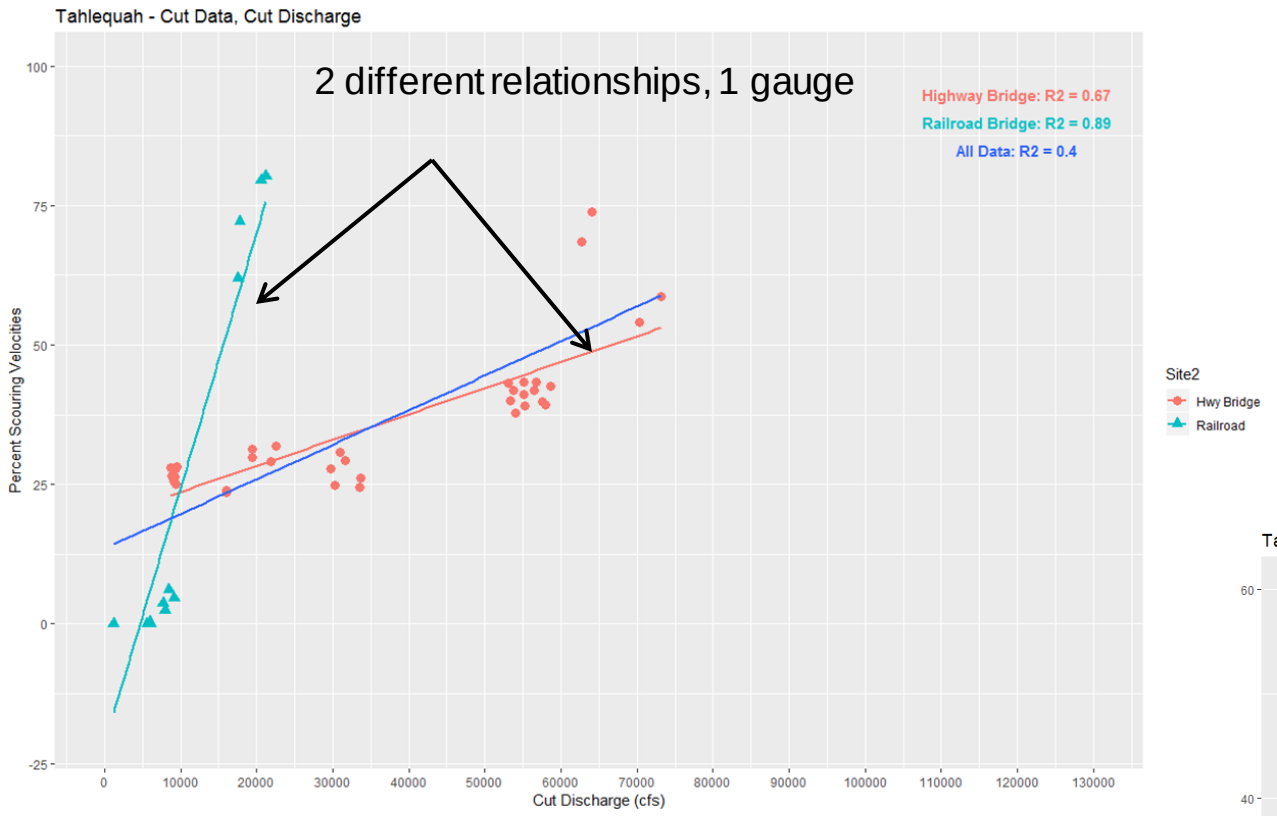






Max: 8 ft/s
Inter: 6 ft/s
Scour: 5 ft/s
No Scour: <5 ft/s

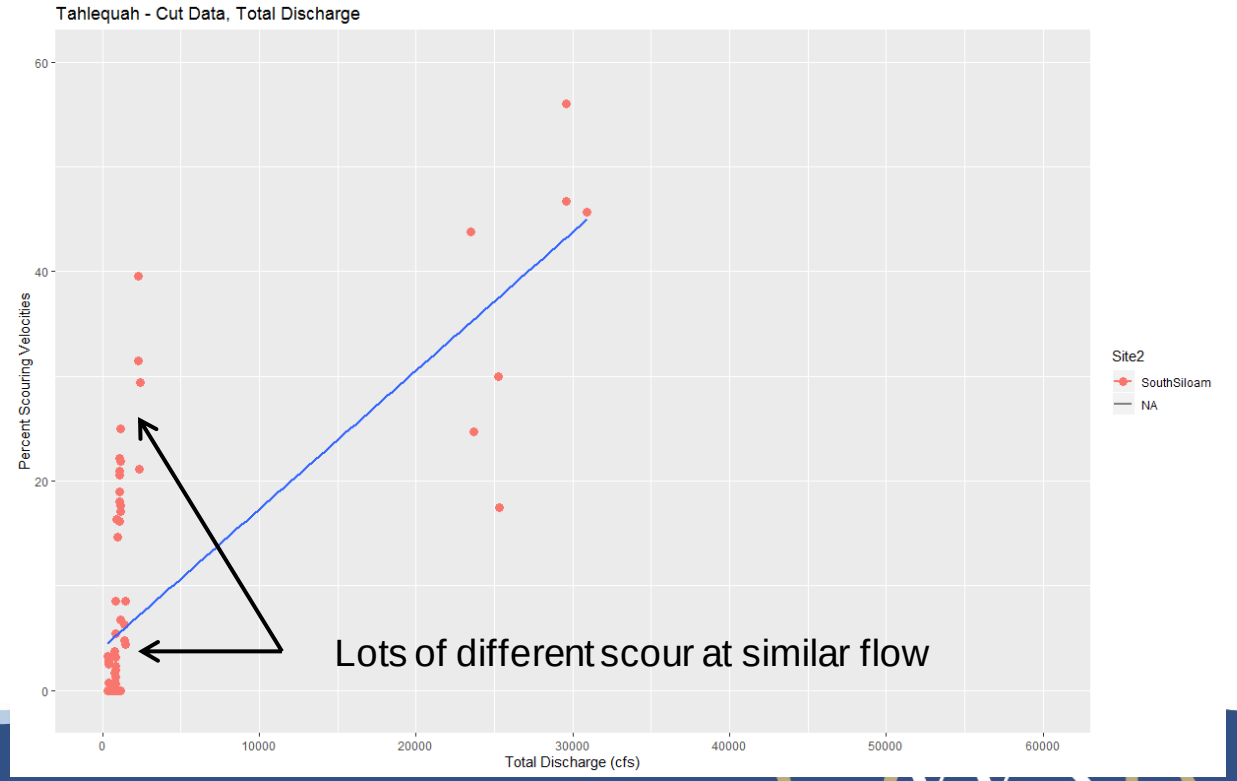
OWRB
the water agency



Tahlequah

- Can not consistently relate scour velocity with discharge

South Siloam Springs



Outcome of Critical Condition Analyses

Scour Analysis Results

- Results very dynamic and highly variable
- Not consistent across watershed
- Analysis very labor intensive
- Not effective for operational definition

❖ Hydrograph separation analysis will provide foundation for interpretation of critical condition language

❖ Staff finds that a 55% baseflow threshold would reasonably address the critical condition recommendation

Question Break 2

Tahlequah Creek

Calculating 6-month average

- How many measured TP values (*"n"*) required for each 6-month average?

- How many 6-month averages ("*N*") per year?
  - 6-month rolling average calculated on monthly basis
  - Maximum of 12, 6-month averages per year

Calculating 6-month average

- Reviewed monitoring programs, found that at least 80% of time at least 1 measured TP value per month available

2 Goals

1. Monitoring programs need some flexibility, no program is perfect
2. Maximize the number of 6-month averages ("N") calculated each year

❖ Requiring at least **4 measured TP values for each 6-month average** calculation attains both of these goals.

Assessing 6-month averages

- How many 6-month averages ("*N*") required for beneficial use assessment

– Frequency

- 1-year
  - No More than 1 exceedance per 1-year period
- 5-year
  - No More than 3 exceedances per 5-year period

❖ Current OK Assessment Protocol

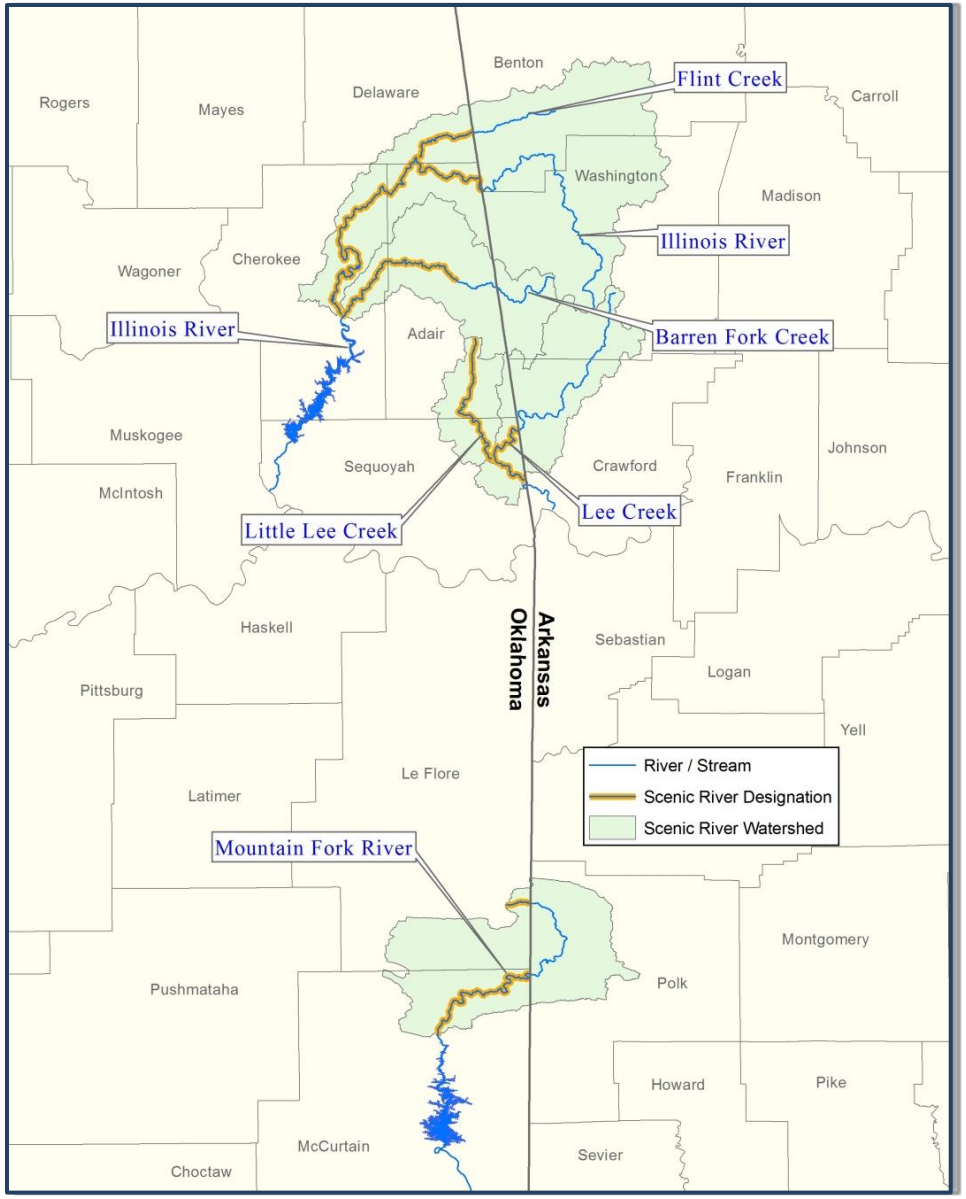
- Minimum of 10 samples…..
- Considering minimum of 10 6-month averages ("N") per year

Rule Changes

- 6 scenic rivers, changes only apply to Illinois River Watershed

- Chapter 45
  - ✓ Revised water quality criteria

- Chapter 46
  - ✓ Critical condition operational definition
  - ✓ Use Assessment Protocol, changes accommodate monitoring programs



OWRB
the water agency

Stakeholder Participation

- We value stakeholder participation and want to hear from you!
  - **Contact us directly with questions**
  - **Webinars**

    September 22nd at 7:00 pm

    October 6th at 7:00 pm
  - **Website**

    http://www.owrb.ok.gov/rules/wqs/revisions/totalphosphorous.php
  - **Email Notices – GovDelivery**

    https://public.govdelivery.com/accounts/OKWRB/subscriber/new?qsp=CODE_RED

Rulemaking Schedule

❖ **December 2020 Draft Rules published in OK Register and formal public participation process starts**

Activity	Timeframe
Governor & OSEE review of draft rules	November 2020
Draft Rules Published in OK Register	December 2020
OWRB Public Hearing & Public Comment Period	**January 2021**
OWRB Meeting & Rule Consideration	**February 2021**
Legislative & Gubernatorial Review	Spring 2021
Rules Become State Law	September 2021
EPA Approval	February - March 2022

Final Questions

Staff Contact Information

Monty Porter
monty.porter@owrb.ok.gov

Rebecca Veiga Nascimento
rebecca.veiga@owrb.ok.gov

Jade Jones
jade.jones@owrb.ok.gov

Illinois River at Tahlequah

OWRB
the water agency