3rd Quarter
September 6, 2016

SJRBC
St. Joseph River Basin Commission

Financials

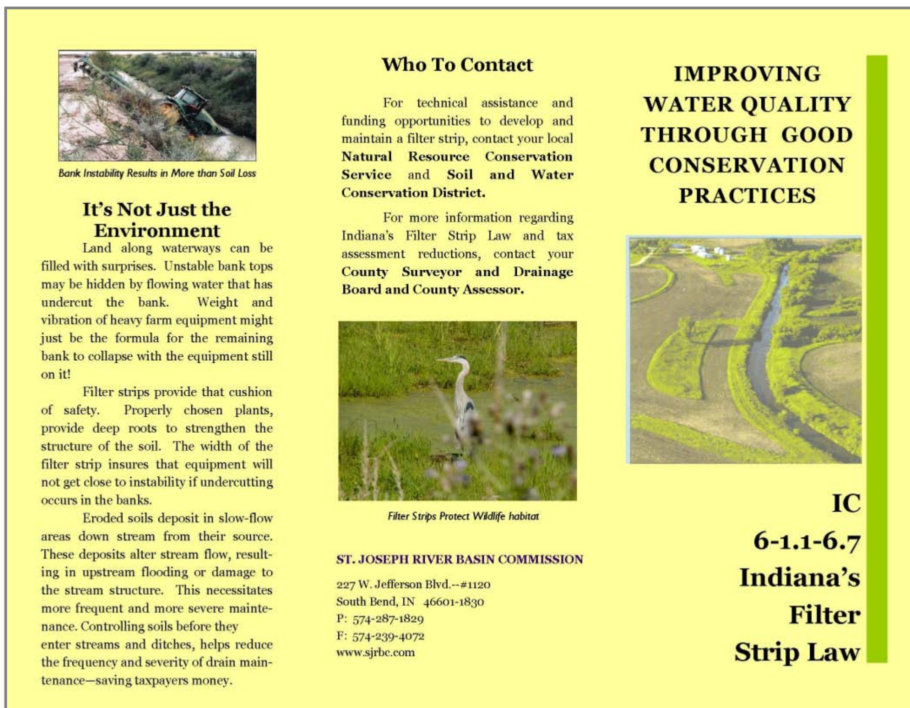
- Financial Report
- Approval of Claims

Old Business

- Basin Updates

Old Business

- Basin Updates
- St. Joseph River Basin Filter Strip Initiative



Bank Instability Results in More than Soil Loss

It's Not Just the Environment

Land along waterways can be filled with surprises. Unstable bank tops may be hidden by flowing water that has undercut the bank. Weight and vibration of heavy farm equipment might just be the formula for the remaining bank to collapse with the equipment still on it!

Filter strips provide that cushion of safety. Properly chosen plants, provide deep roots to strengthen the structure of the soil. The width of the filter strip insures that equipment will not get close to instability if undercutting occurs in the banks.

Eroded soils deposit in slow-flow areas down stream from their source. These deposits alter stream flow, resulting in upstream flooding or damage to the stream structure. This necessitates more frequent and more severe maintenance. Controlling soils before they enter streams and ditches, helps reduce the frequency and severity of drain maintenance—saving taxpayers money.

Who To Contact

For technical assistance and funding opportunities to develop and maintain a filter strip, contact your local **Natural Resource Conservation Service** and **Soil and Water Conservation District.**

For more information regarding Indiana's Filter Strip Law and tax assessment reductions, contact your **County Surveyor and Drainage Board and County Assessor.**

Filter Strips Protect Wildlife habitat

ST. JOSEPH RIVER BASIN COMMISSION

227 W. Jefferson Blvd.--#1120
South Bend, IN 46601-1830
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IMPROVING WATER QUALITY THROUGH GOOD CONSERVATION PRACTICES

IC 6-1.1-6.7 Indiana's Filter Strip Law

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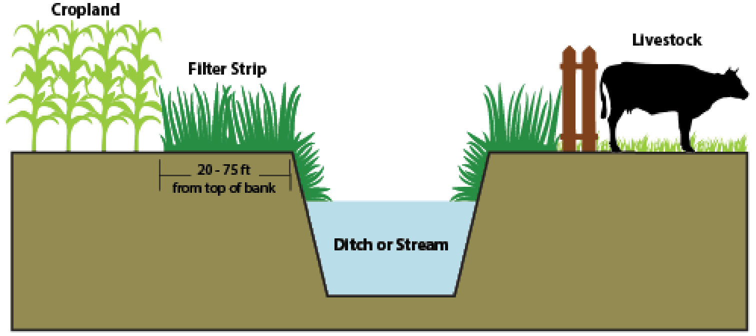
The Indiana Filter Strip Law

In 1991 the Indiana General Assembly approved the Indiana Filter Strip Law (IC 6-1.1-6.7) defining what qualifies as a filter strip, how it will be maintained, who approves specifications, and how classification will be recorded.

Above all, the land designated as a "classified filter strip" **will be assessed property tax at a rate of $1.00 per acre** compared to the current method of assessments for agricultural land.



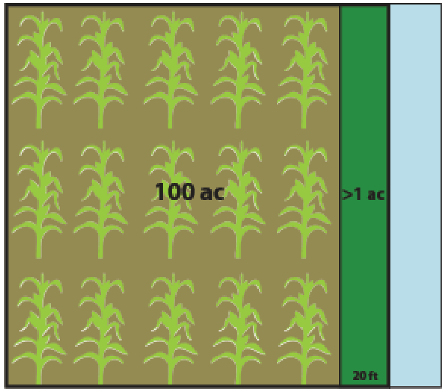
Follow these steps to to save money under the Indiana Filter Strip

1. **Consult with your local Soil and Water Conservation District (SWCD) and Natural Resource Conservation Service (NRCS) staff on filter strip design and maintenance.**
2. **Attain a described parcel plat from County Surveyor or any liscence surveyor.**
3. **Obtain an up-to-date assessment of proposed filter strip parcel**
4. **Submit an application to your County Surveyor with following documents:**
   - The parcel plat
   - The county assessment
   - Signatures of land owner, County Surveyor, County Assessor
   - A letter of filter strip approval from your local Soil and Water Conservation District
5. **Approved application is returned to applicant.**
6. **Land entered for taxation at the assessed value of one dollar ($1.00) per acre.**

Tax Savings Eample

Mr. Smith works with his local SWCD and NRCS staff to attain cost-share funds to install a 20 foot wide filter strip along a ditch running the length of his 100 acre square plot. The information below outlines the filter strip specifications and Mr. Smith's projected annual tax savings based on Indiana State averages, on top of the farmbill monies he received. It's easy to see that the Indiana Filter Strip Law can provide a significant tax break for any farmer, large or small.

Filter Strip Specs



Old Taxes*	New Taxes	Tax Savings	Tax Reduction
$34.29	$0.96	**$33.39**	**97%**

**Old Taxes calculated using the following information*
*Property Tax = Base Rate Value * Soil Productivity Factor * (1.0 - Deduction Factor)* Tax Rate*
Agricultural Land Base Rate $1,960/ac (2016 IDLGF Rate)
Soil Productivity Factor: 0.951 (2014 Indiana County Avg)
Deduction Factor = 0.0
Tax Rate: 1.92% (2016 Indiana Township Avgs)

Old Business

- Basin Updates
- St. Joseph River Basin Filter Strip Initiative
- 2017 IWLA Scholarship
  - Application Period Begins – September 6
  - Applications Due – September 30
  - Notify Awardee – October 11
  - Register – November 4

Old Business

- Basin Updates
- St. Joseph River Basin Filter Strip Initiative
- 2017 IWLA Scholarship
- Cobus Creek Watershed Diagnostic Study

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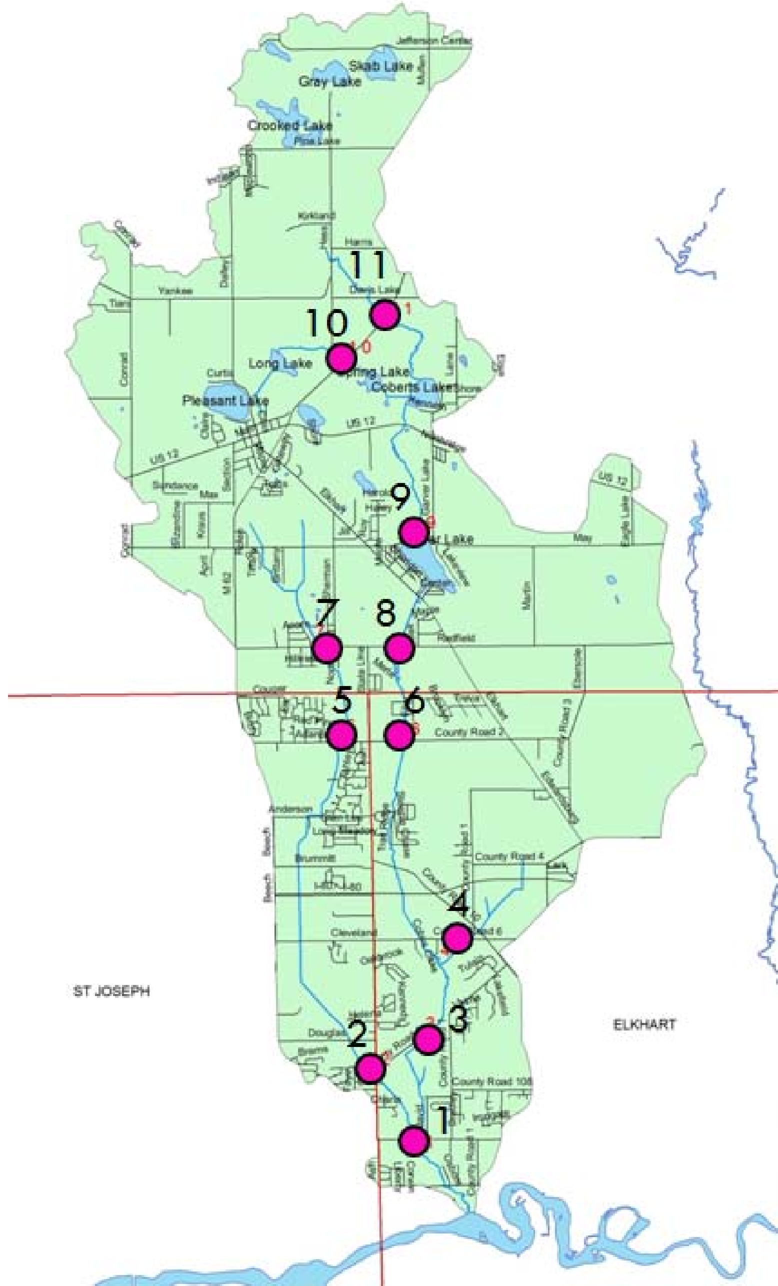
Cobus Creek Watershed Diagnostic Study

Winter 2015	✓ Summarize historical watershed data
Spring 2016	✓ In-the-field data collection
Summer 2016	
Fall 2016	✦ Analyze/model data & develop recommendations
Winter 2016	
Spring 2017	Final document approved

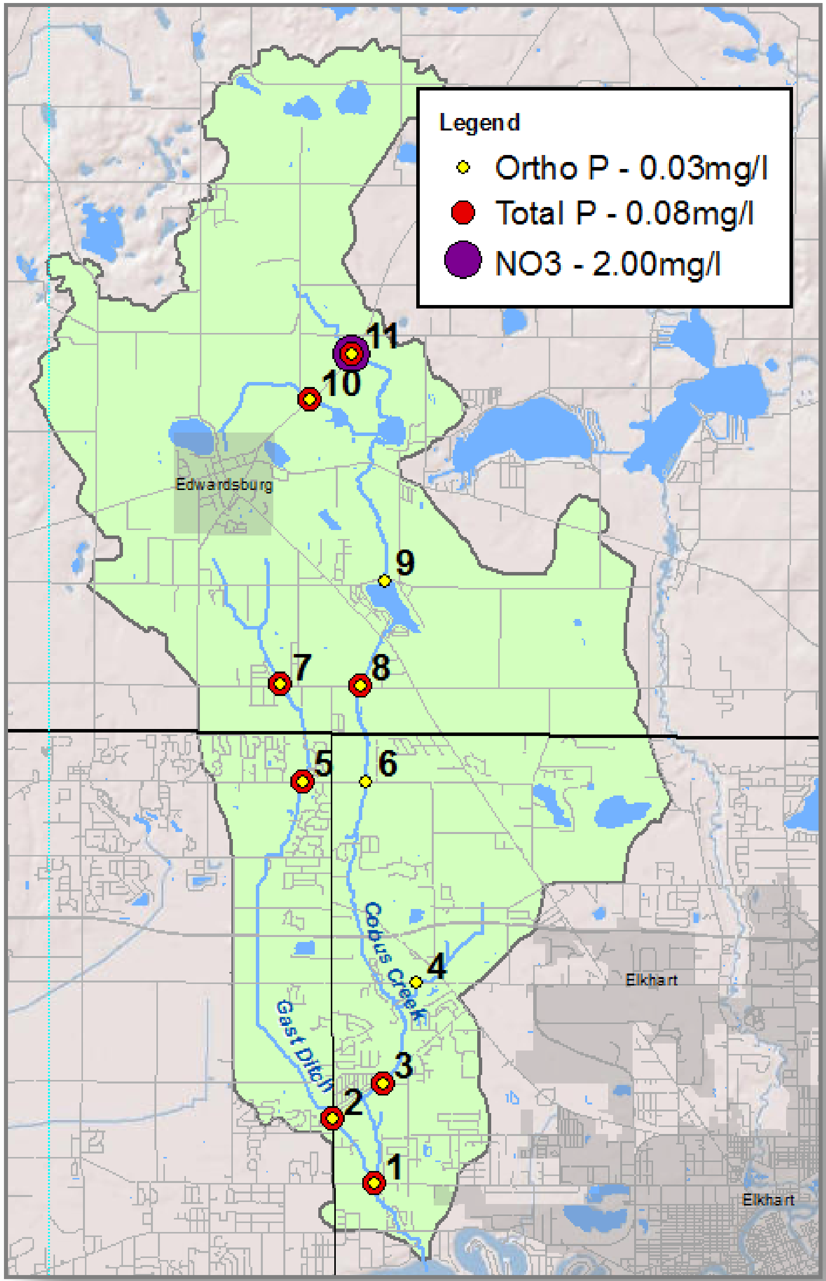
Cobus Creek – Water Sampling

- 11 Sites
- Chemical and aquatic
  - ▫ 2 chemical samples (b/w)
  - ▫ 1 organsim sample
    - Fish and macros
- Data currently being processed



Chemical Sampling Results (so far) 1

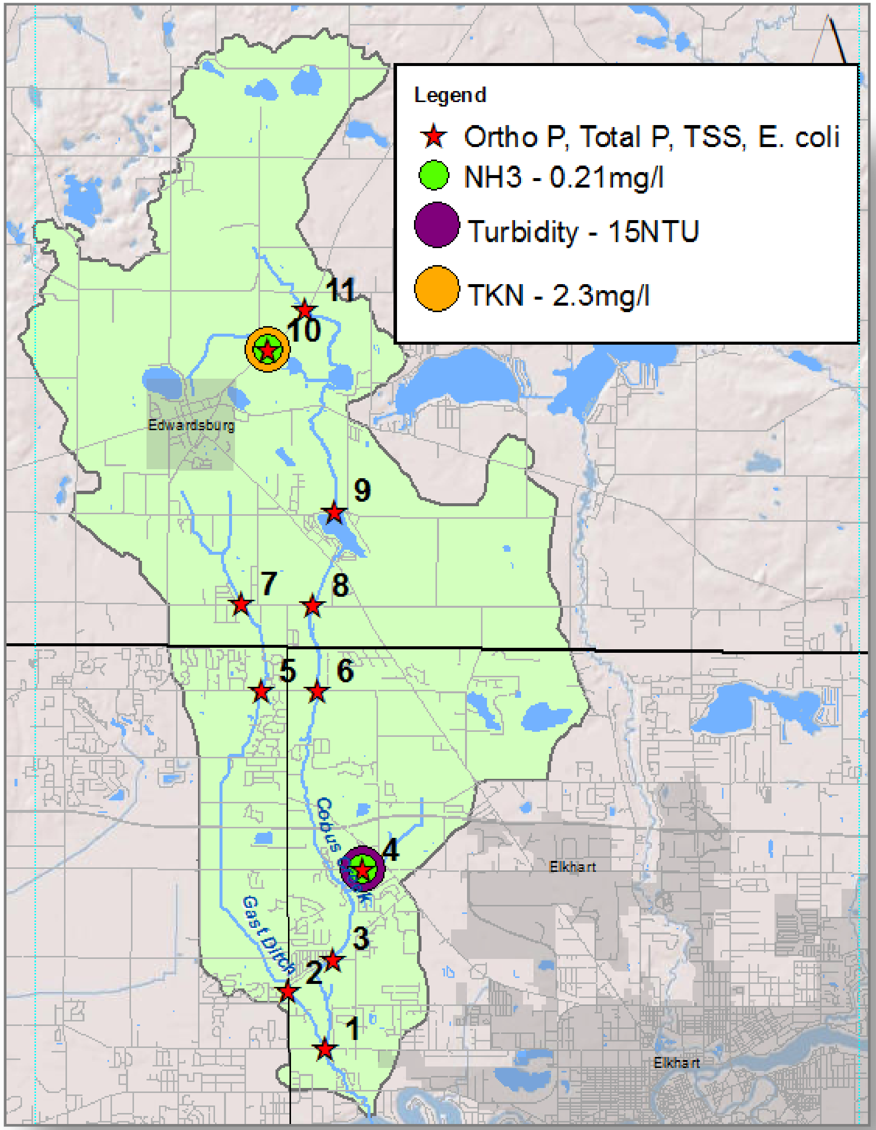
- 2 Chemical Samples
- Baseflow concerns
  - Orthophosphate – all
  - TP– majority
- Loads consistent with flow



Chemical Sampling Results (so far) 2

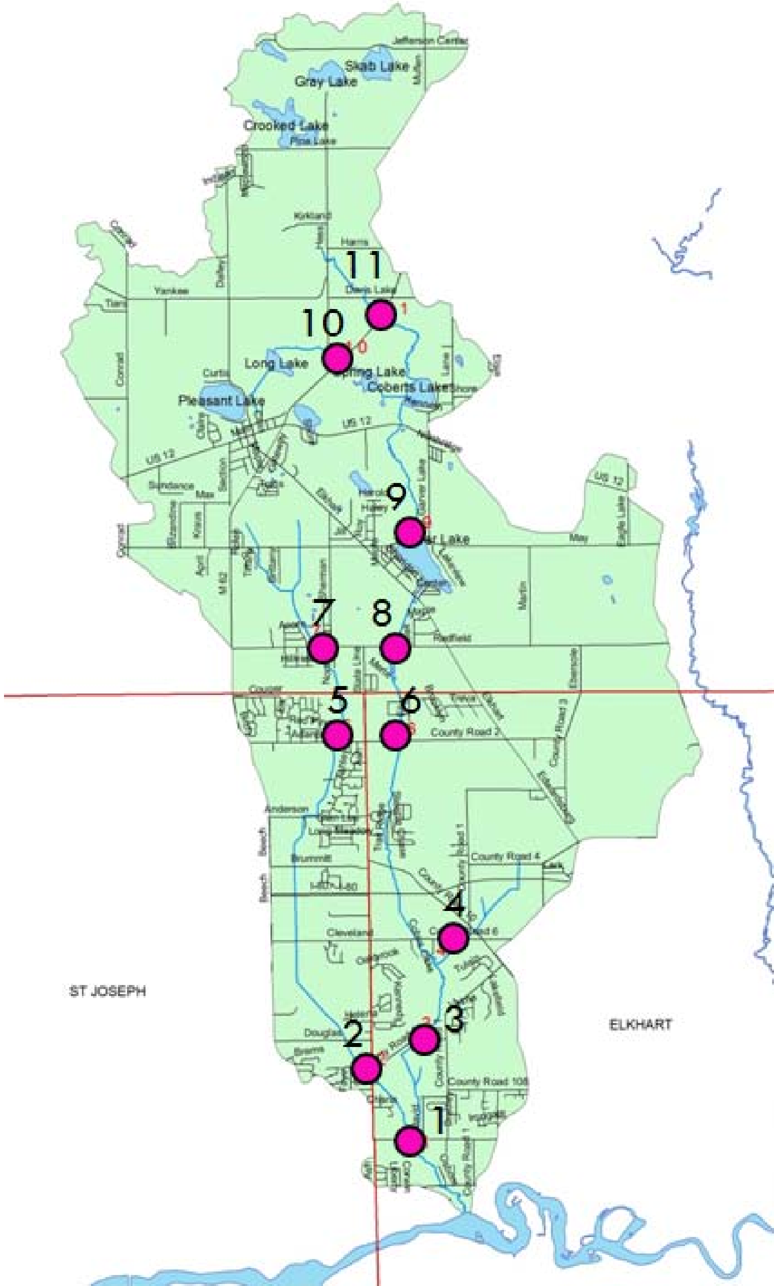
- Wet weather concerns
  - All Sites
    - Ortho P, Total P, TSS, E Coli
  - Specific
    - CEL – NH3 & Turb
    - Coberts – NH3 & TKN

- Suggests serious runoff



Chemical Sampling Results (so far) 3

- Pollutant “yields”
  - Yield = load/drainage area
  - Grams/day / acre
  - Compare concentrations of pollutants on land
- Sites susceptible to pollution
- Gast Ditch - highest yields
  - Sites 5 & 7
- Additional findings…
  - Site 11 – NO_3 & TSS
  - Site 1 – a few highs



Brown Trout – Cobus Creek @ CR12 - Elkhart

Bowfin – Cobus Creek & Redfield Rd.

Bluegill – Gast Ditch

Central mudminnow – Cobus latteral

Iowa Darter– Cobus Creek

Perched culvert on Cobus @ CR 2

Cobus Creek Watershed Diagnostic Study

Winter 2015	✓ Summarize historical watershed data
Spring 2016	
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Fall 2016	
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Old Business

- Basin Updates
- St. Joseph River Basin Filter Strip Initiative
- 2017 IWLA Scholarship
- Cobus Creek Watershed Diagnostic Study
- Water Monitoring Program Update

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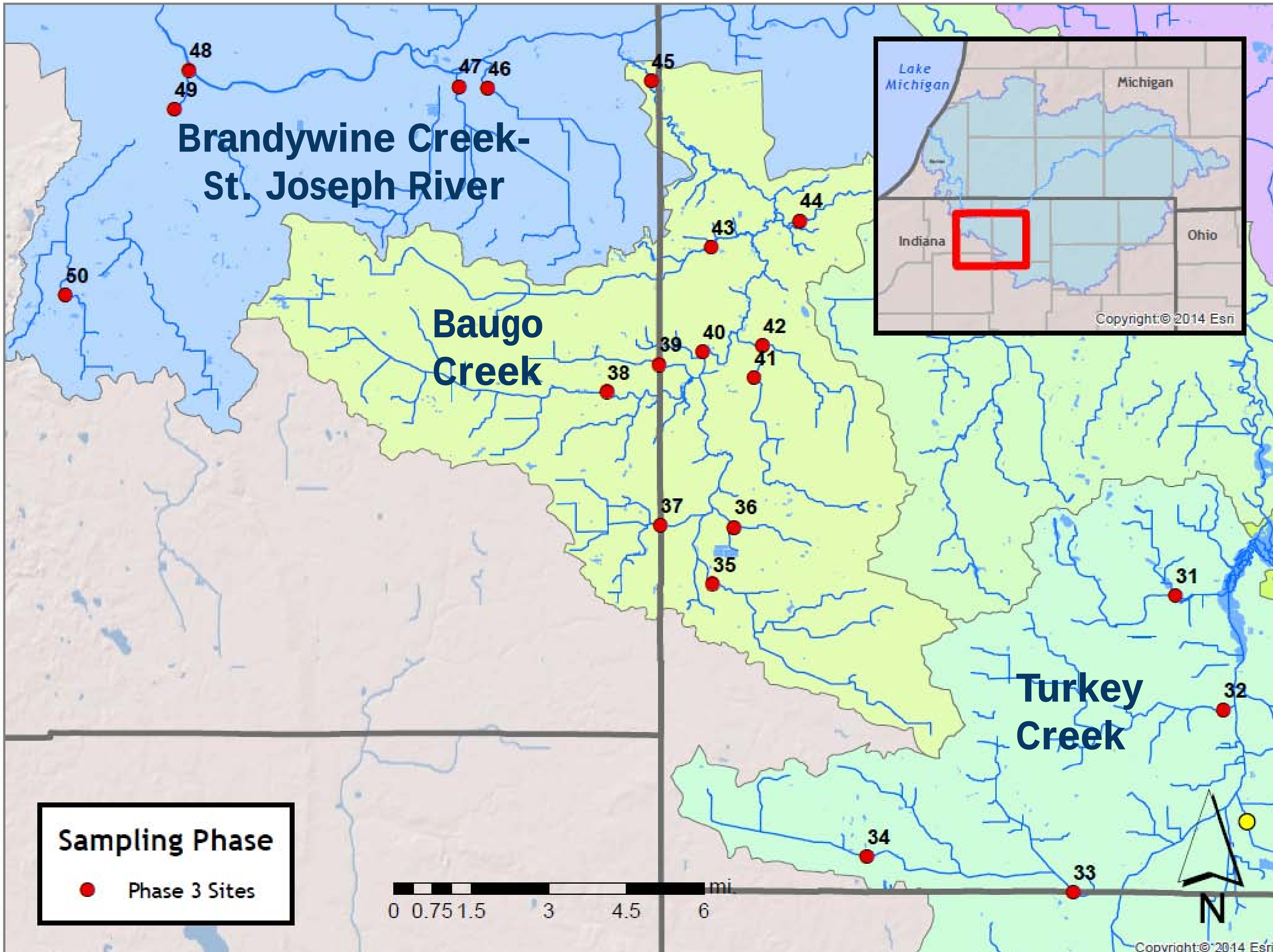
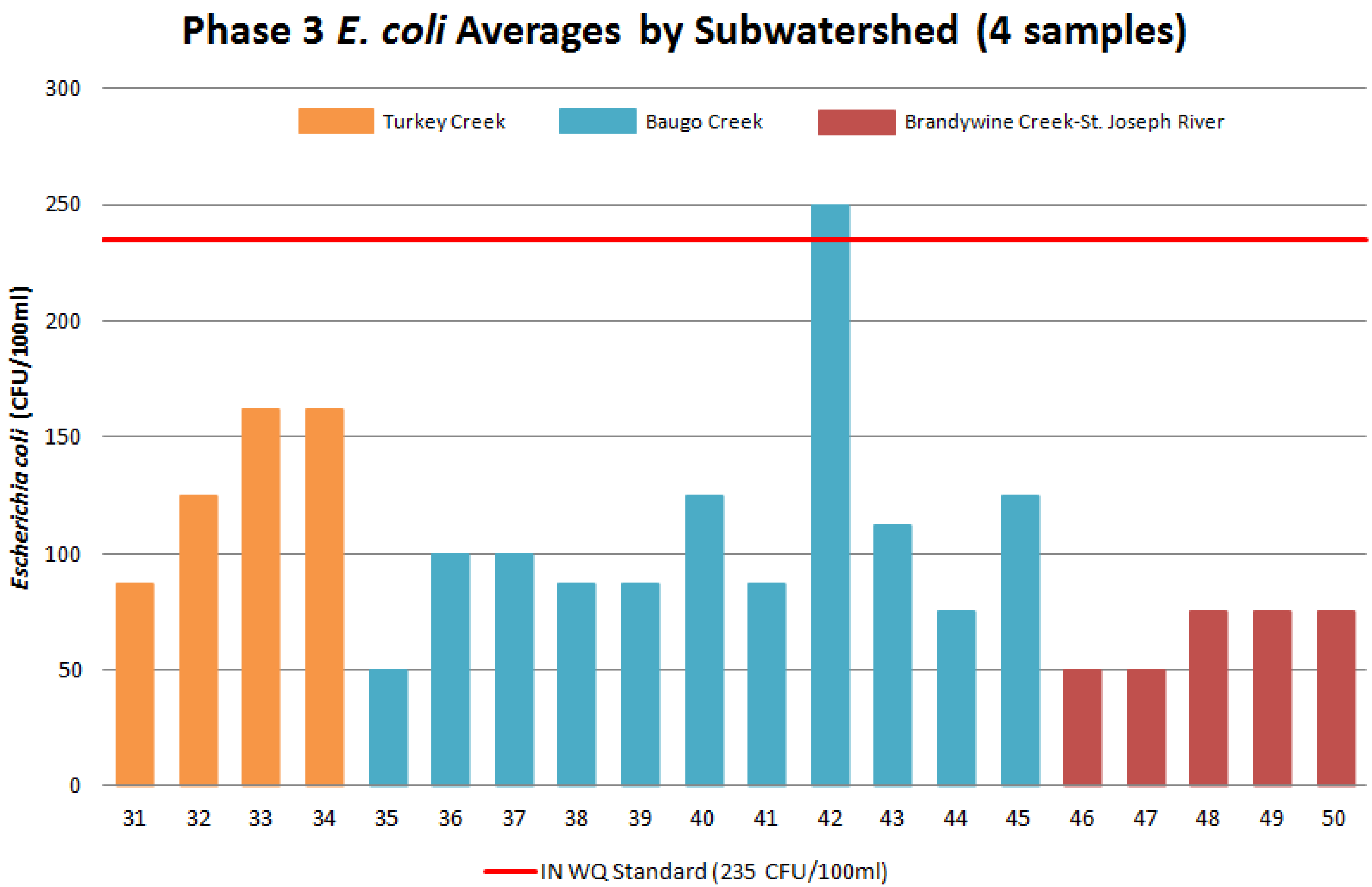
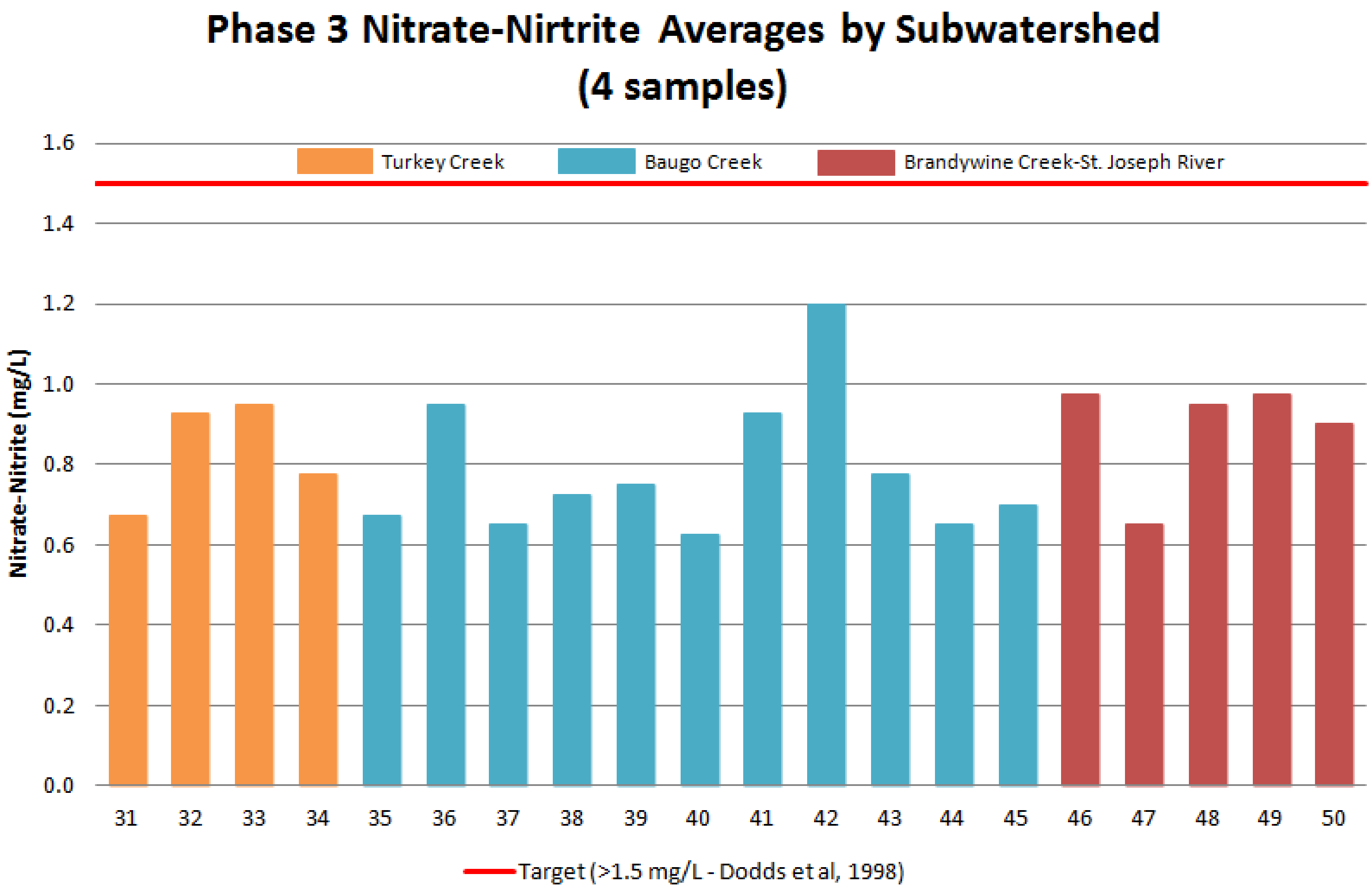
2016-2017 Water Monitoring Sites (Phase 3)



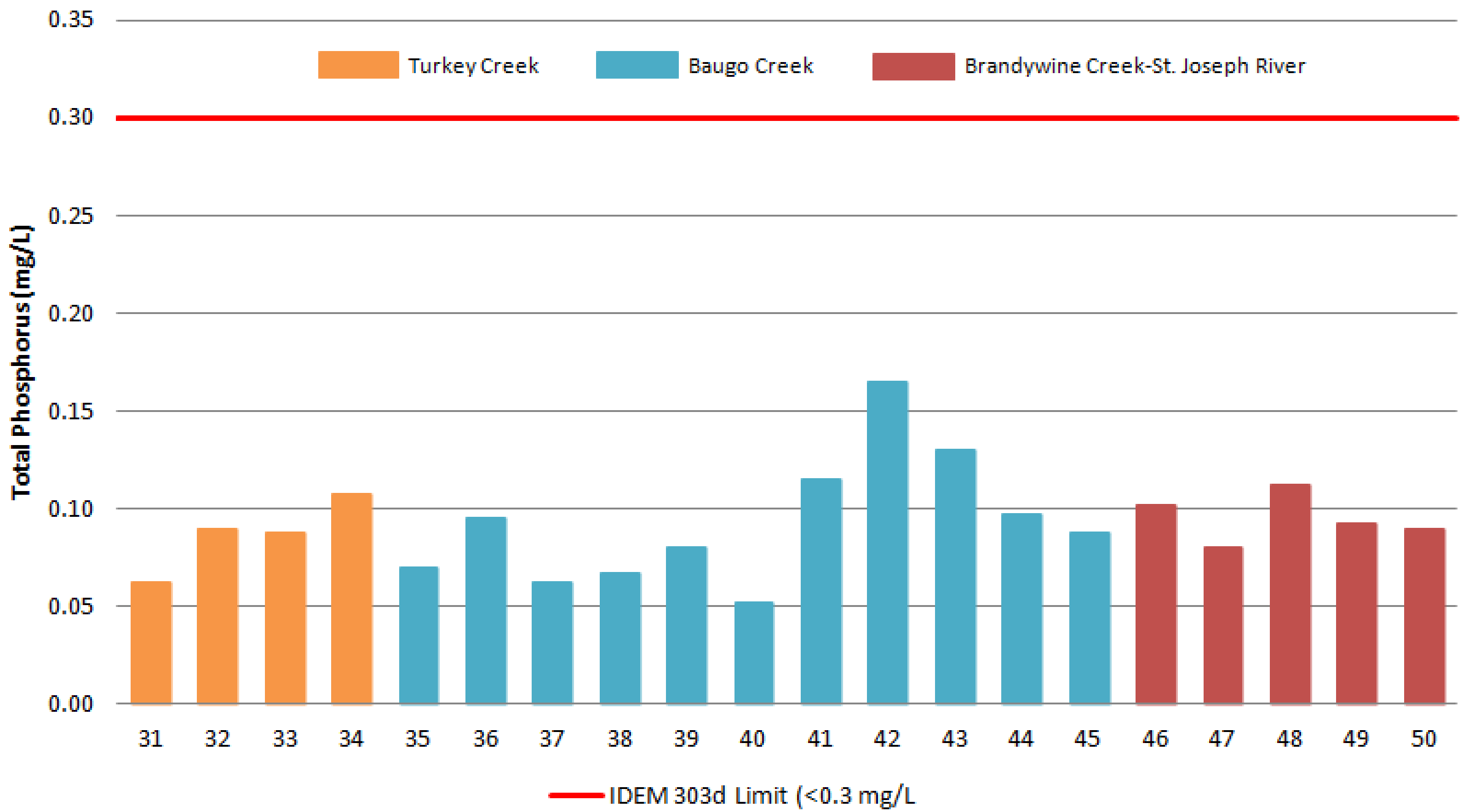
Site #	Water Body
31	Swoveland Ditch
32	Dausman Ditch
33	Berlin Court Grand Ditch
34	Berlin Court Grand Ditch
35	Miller Ditch
36	Werntz Ditch
37	Billman Ditch
38	Grimes Ditch
39	Barkey Ditch
40	Baugo Creek
41	Township Ditch
42	Nunemaker Ditch
43	Rogers Ditch
44	UNT
45	Baugo Creek
46	Woodward Ditch
47	Eller Ditch
48	Bowman Creek
49	Bowman Creek
50	Authen Creek

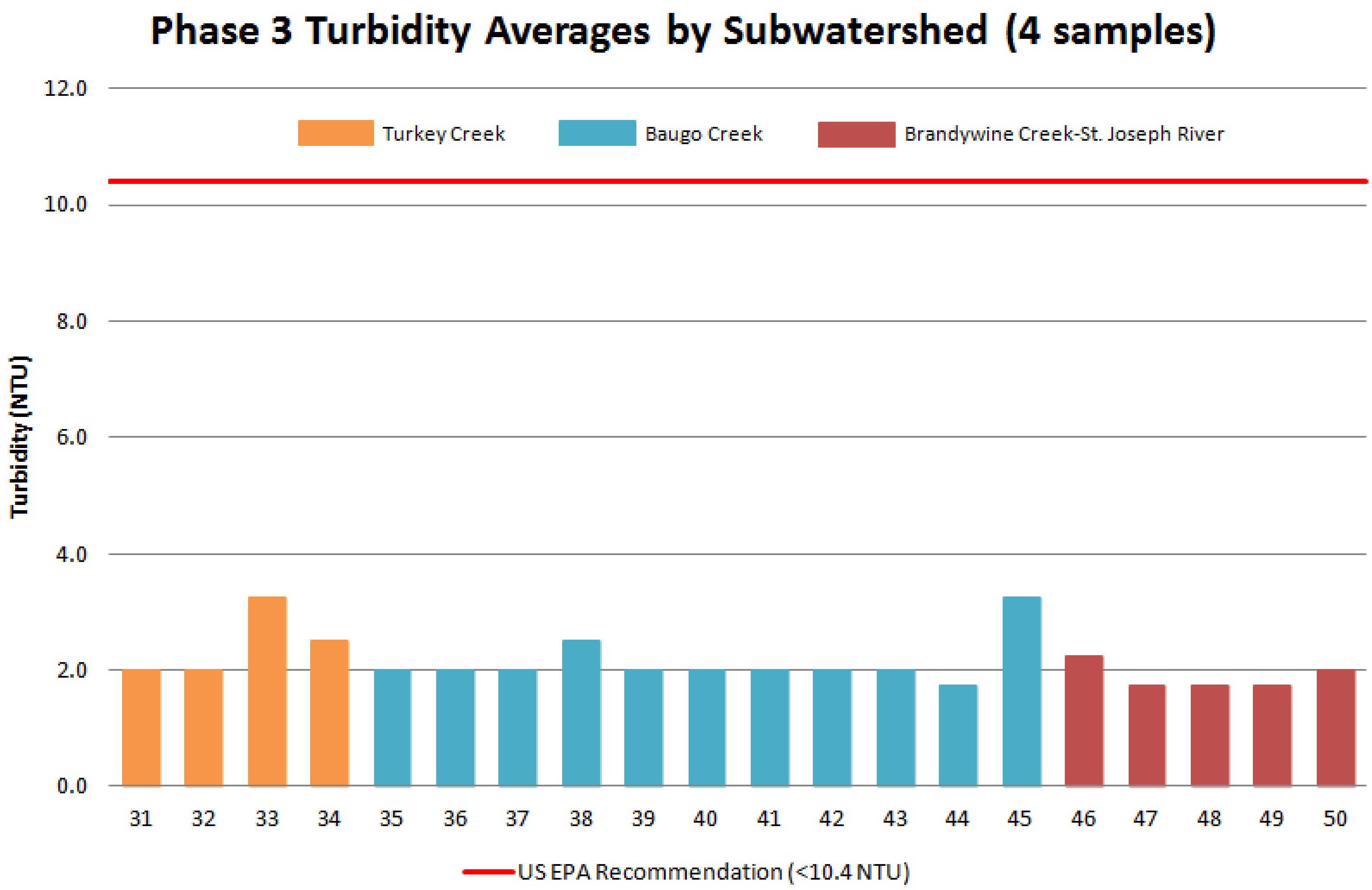

Phase 3 E. coli Averages by Subwatershed (4 samples)
Turkey Creek
Baugo Creek
Brandywine Creek-St. Joseph River
Escherichia coli (CFU/100ml)
300
250
200
150
100
50
0
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
IN WQ Standard (235 CFU/100ml)



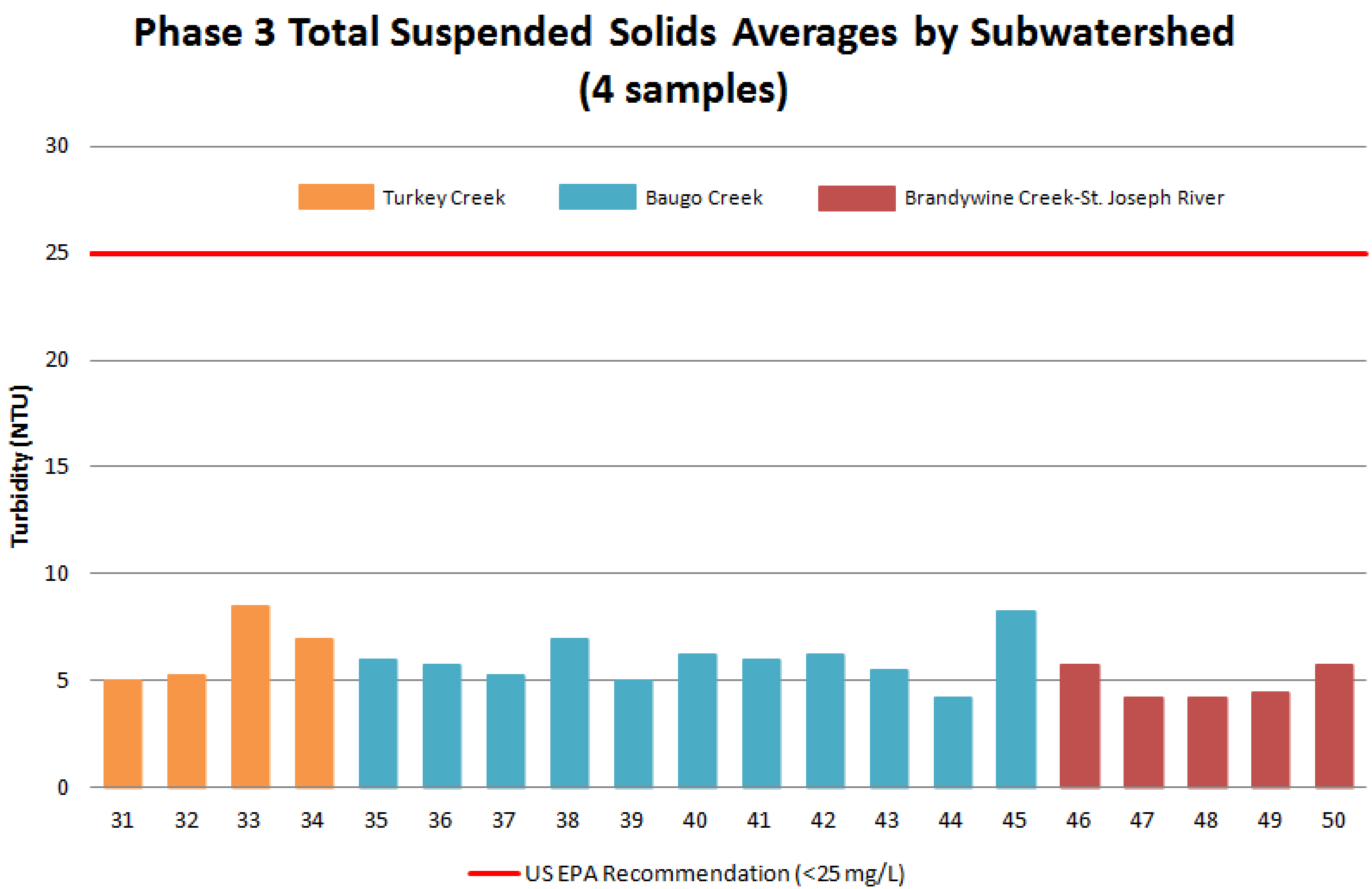
Phase 3 Nitrate-Nirtrite Averages by Subwatershed
(4 samples)
Turkey Creek
Baugo Creek
Brandywine Creek-St. Joseph River
Nitrate-Nitrite (mg/L)
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
Target (>1.5 mg/L - Dodds et al, 1998)

Phase 3 Total Phosphorus Averages by Subwatershed (4 samples)





Phase 3 Turbidity Averages by Subwatershed (4 samples)
Turkey Creek
Baugo Creek
Brandywine Creek-St. Joseph River
Turbidity (NTU)
12.0
10.0
8.0
6.0
4.0
2.0
0.0
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
US EPA Recommendation (<10.4 NTU)


Phase 3 Total Suspended Solids Averages by Subwatershed (4 samples)
Turkey Creek
Baugo Creek
Brandywine Creek-St. Joseph River
Turbidity (NTU)
30
25
20
15
10
5
0
31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50
US EPA Recommendation (<25 mg/L)

Water Monitoring Program

- New RFP for April 2017 – March 2020
- Similar scope of work
- Review committee

Old Business

- Basin Updates
- St. Joseph River Basin Filter Strip Initiative
- 2017 IWLA Scholarship
- Cobus Creek Watershed Diagnostic Study
- Water Monitoring Program Update
- Elkhart River Conservation Initiative
  - A collaborative effort to implement sustainable projects in Elkhart River Watershed

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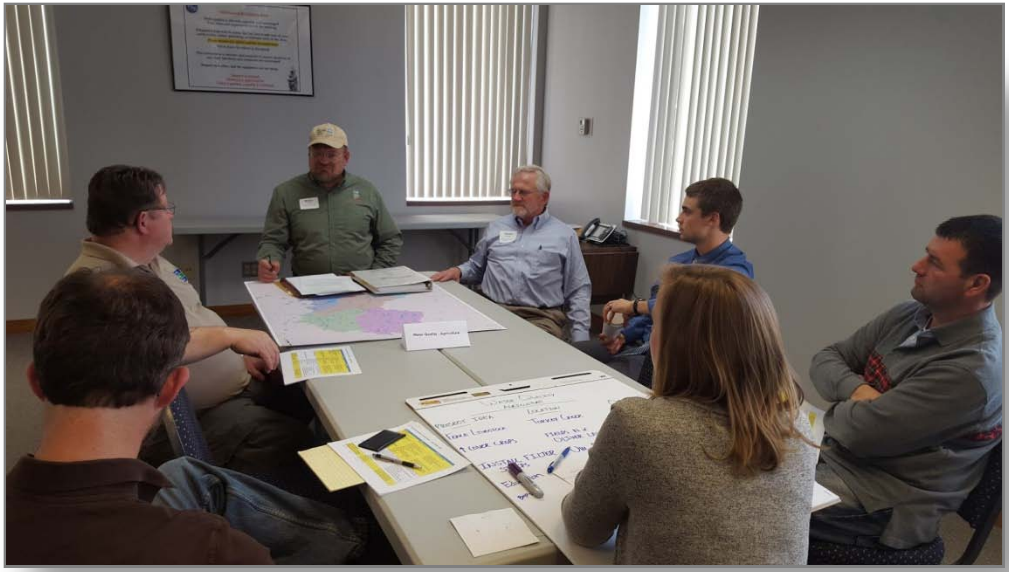
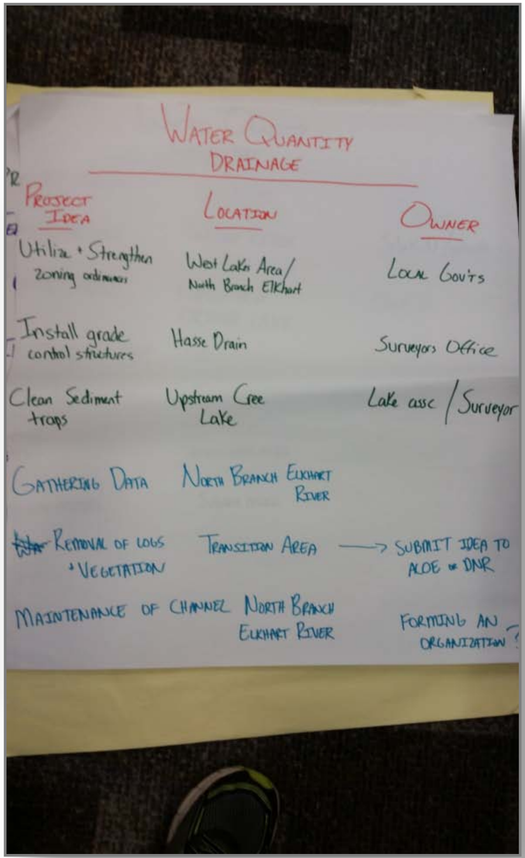
Elkhart River Conservation Initiative

- Workshop Held: March 29, 2016
  - Developed list of potential projects





Elkhart River Conservation Initiative

- Meeting August 22 – Prioritizing & Funding
  - Overview of proposed project alternatives
  - Prioritized projects based on benefit/costs
  - Discussed funding alternatives

Natural Lands		
Initiative	Benefit: Large (G) Medium (Y) Small (R)	Cost: Small (G) Medium (Y) Large (R)
Remove all dams in the Elkhart River Watershed	● (G)	● (R)

Elkhart River Conservation Initiative

- Prioritizing projects based on activity responses
- Consolidate funding notes
- Begin matching funding options to projects
- Begin discussions on responsibility

Initiatives	D	A	U	NL	Priority	Funding	Responsibility
Distribute information on Indiana Filter Strip Law to producers in the Elkhart River Watershed 13		X		X			
Implement covercrops, conservation tillage, filter strips and other BMPs in Elkhart River Watershed (heavy focus on headwaters) 2, 3, 4, 5, 7, 10, 13	X	X		X			
Restrict livestock access to all surface waters in Elkhart River Watershed 2, 5, 6, 7, 10, 13		X					
Host a joint lake association workshop education on watersheds, water quality, and shoreline bmps 2, 13	X		X	X			

Real-time Continuous Monitoring of Suspended Sediment and Nutrients in Rivers and Streams

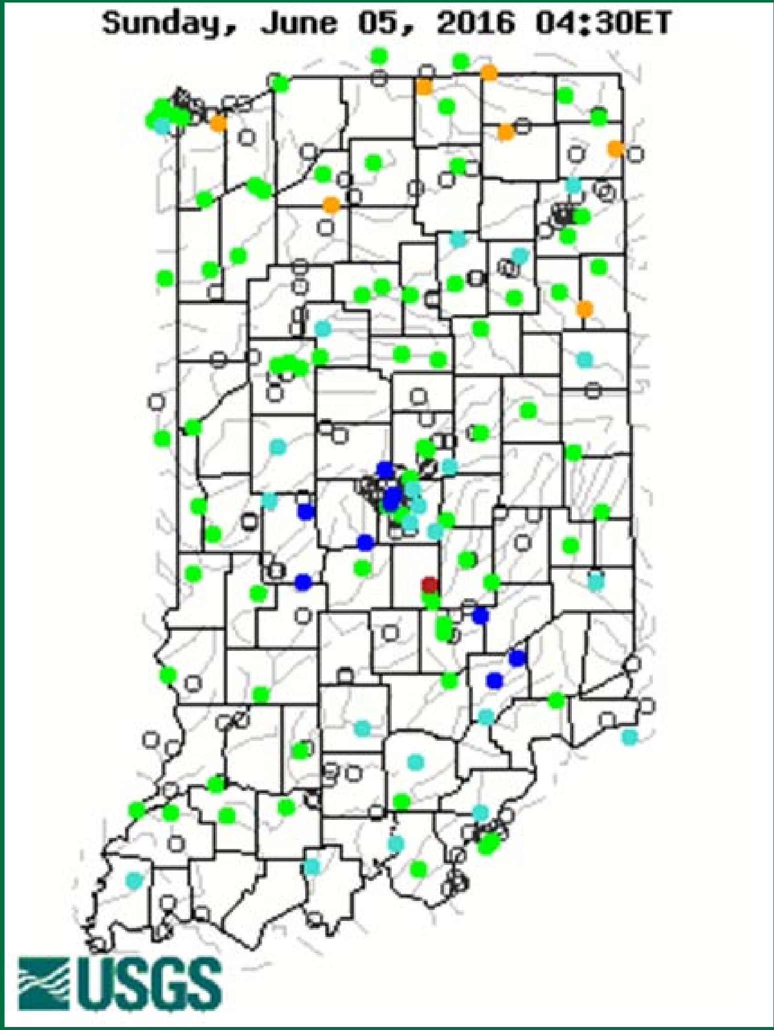
U.S. Department of the Interior
U.S. Geological Survey

USGS Super Gage program

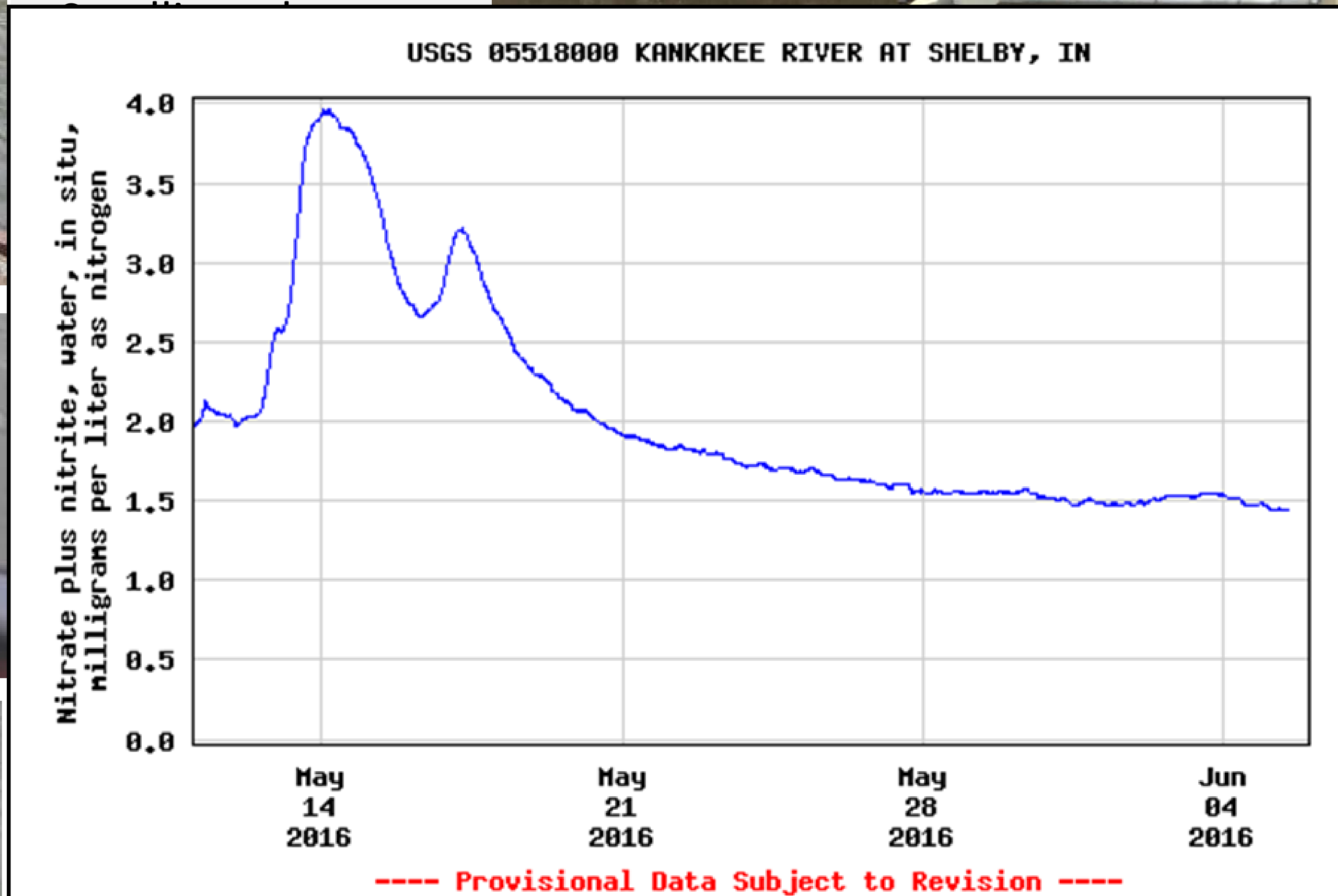
- **Objective: Quantify annual and seasonal loads of suspended sediment and nutrients in rivers and streams**

Method:

1. Compute streamflow
2. Deploy and maintain continuous water-quality and nutrient monitors
3. Collect representative water-quality samples
4. Develop models to compute suspended sediment and nutrient concentrations



Kankakee at Shelby, *Gage Components*



Continuous data are publicly available at:
http://waterdata.usgs.gov/in/nwis/uv?site_no=05518000

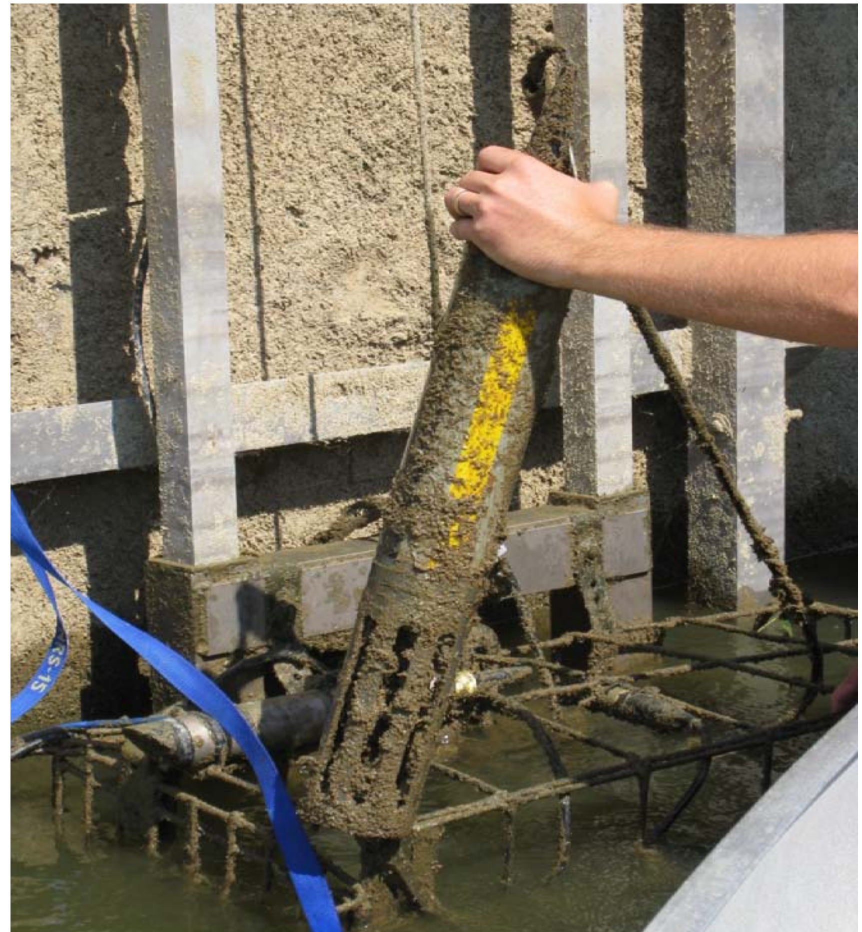
Continuous monitor operation

- Clean and recalibrate the monitor
  - Twice per month during the growing season (Apr-Sept)
  - Once per month during the non-growing season (Oct-Mar)

- Check the monitor on-line daily, troubleshoot as necessary

- Apply fouling corrections and calibration shifts

- Internal review and approval of all data prior to publication



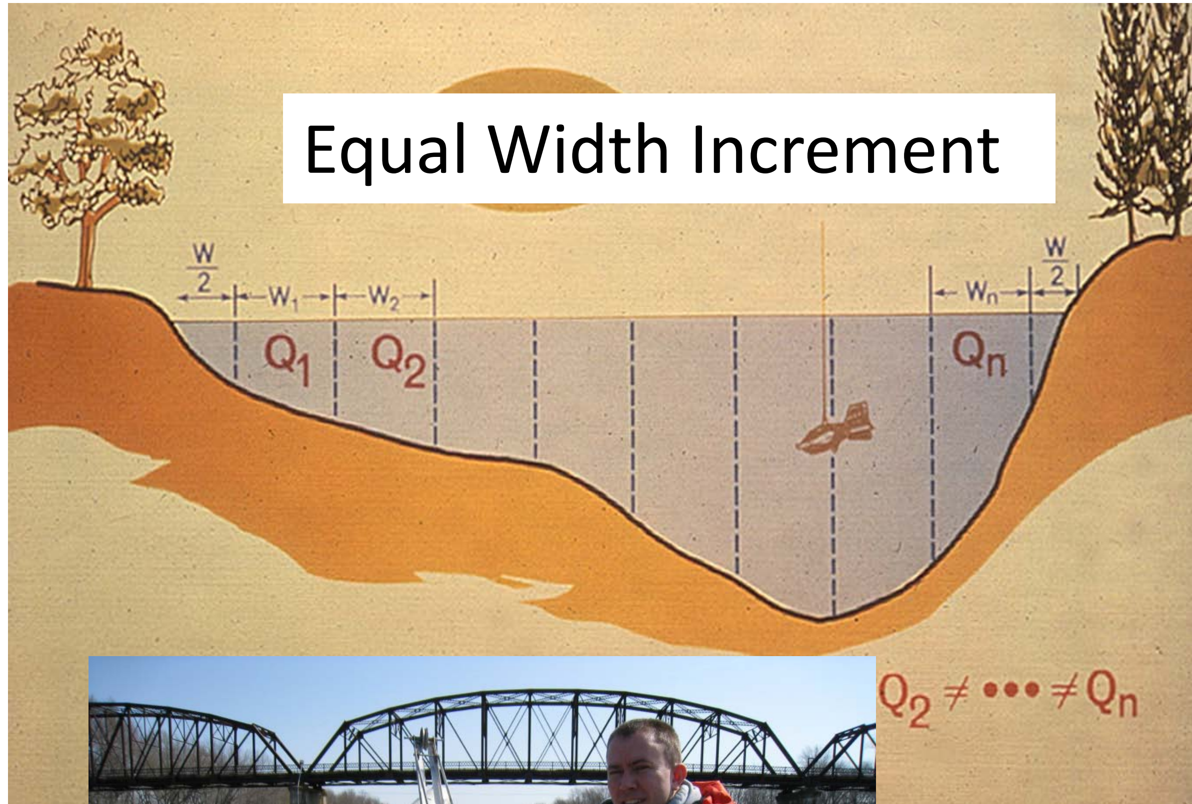
Wagner, R.J., Boulger, R.W., Jr., Oblinger, C.J., and Smith, B.A., 2006, Guidelines and standard procedures for continuous water-quality monitors—Station operation, record computation, and data reporting: U.S. Geological Survey Techniques and Methods 1–D3, 51 p. + 8 attachments; accessed April 10, 2006, at http://pubs.water.usgs.gov/tm1d3

USGS
science for a changing world

Collecting Representative Water Samples

- Depth and width integrated samples
- Samples collected over the range of seasonal and hydrologic conditions
- Samples collected following USGS protocols

U.S. Geological Survey, variously dated, National field manual for the collection of water-quality data: U.S. Geological Survey Techniques of Water-Resources Investigations, book 9, chaps. A1-A9, available online at http://pubs.water.usgs.gov/twri9A.



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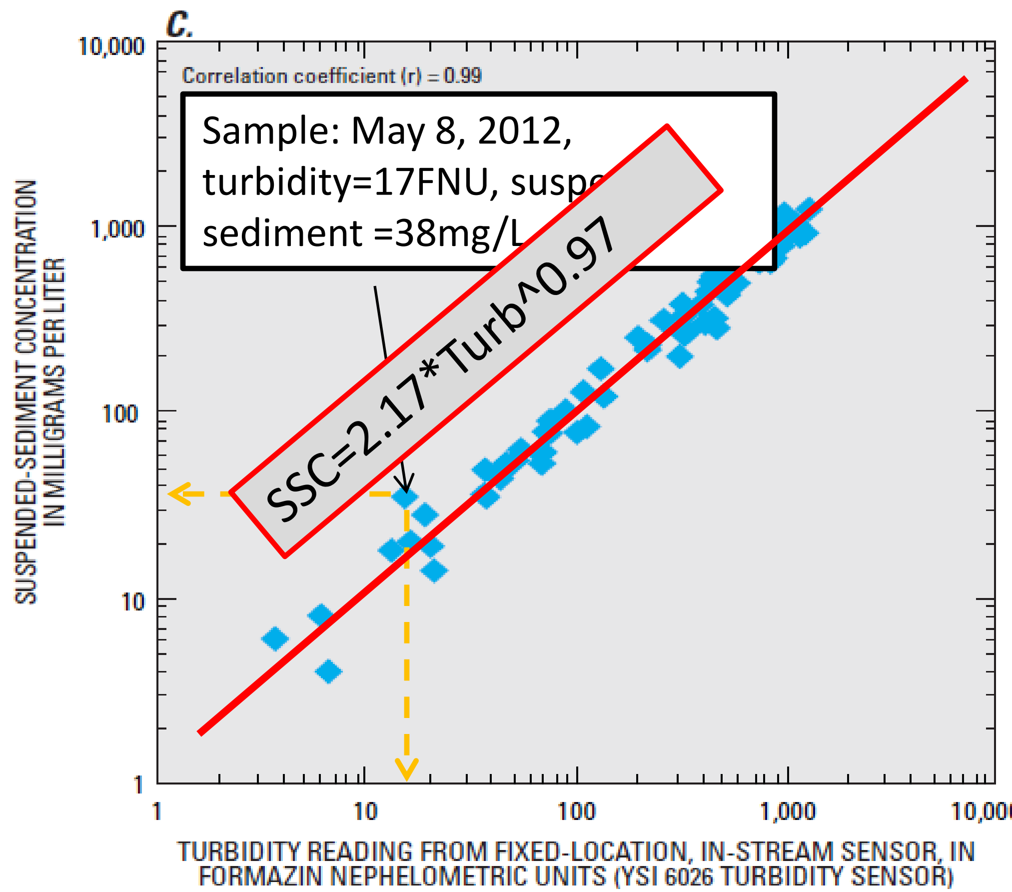
science for a changing world

Surrogate Model Development

- Create regression models using water samples and in-stream sensor values
- Compute or estimate concentrations and loads
- Publish the regression models at nrtwq.usgs.gov

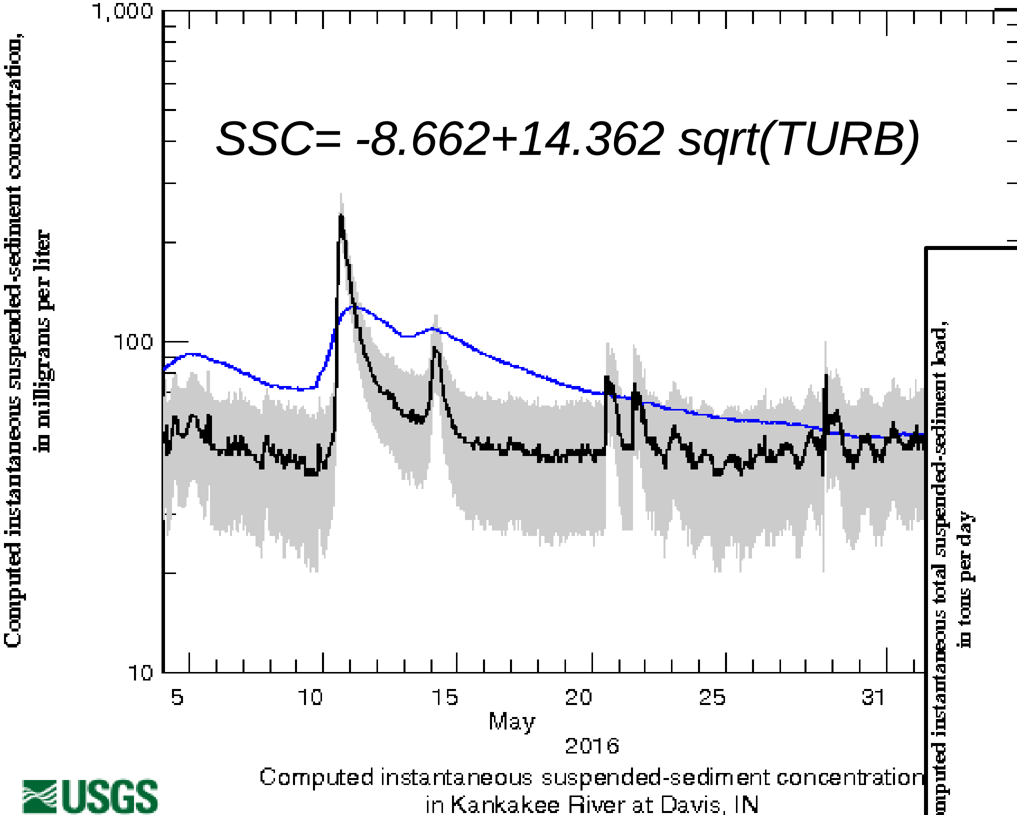


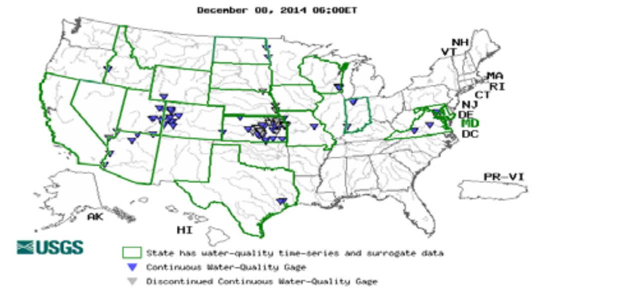
Guidelines and Procedures for Computing Time Series Suspended – Sediment Concentrations and Loads from In-Stream Turbidity-Sensor and Streamflow Data

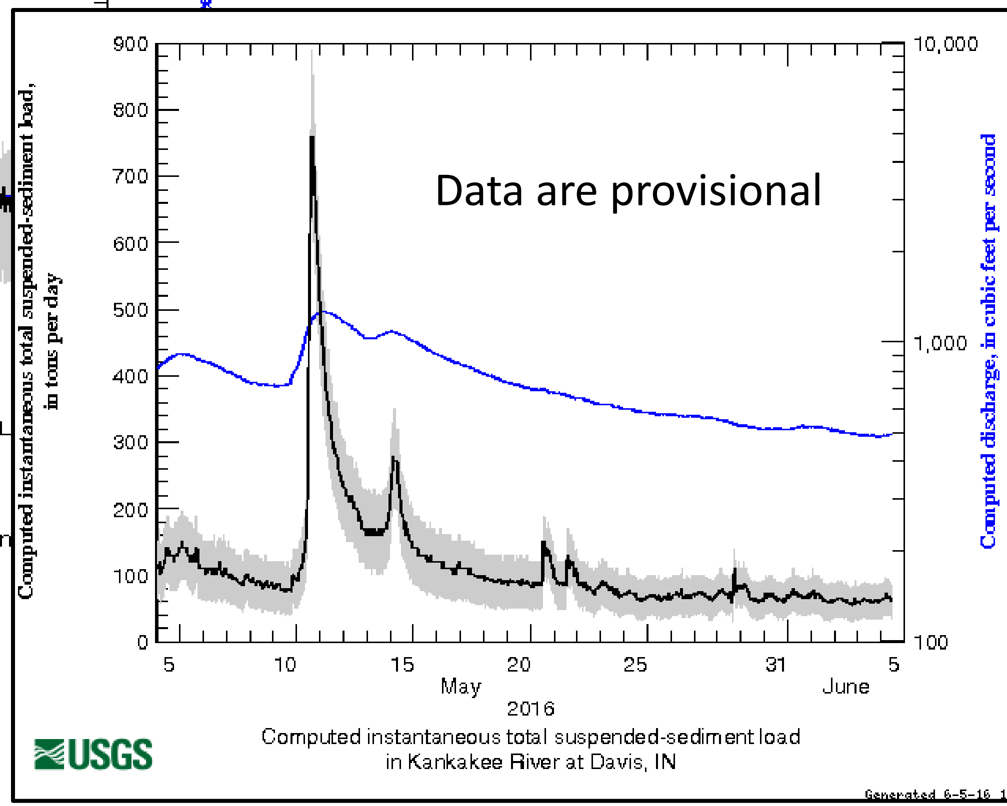
Patrick P. Rasmussen, John R. Gray, G. Douglas Glysson, and Andrew C. Ziegler, 2009

USGS science for a changing world

Concentrations and Loads

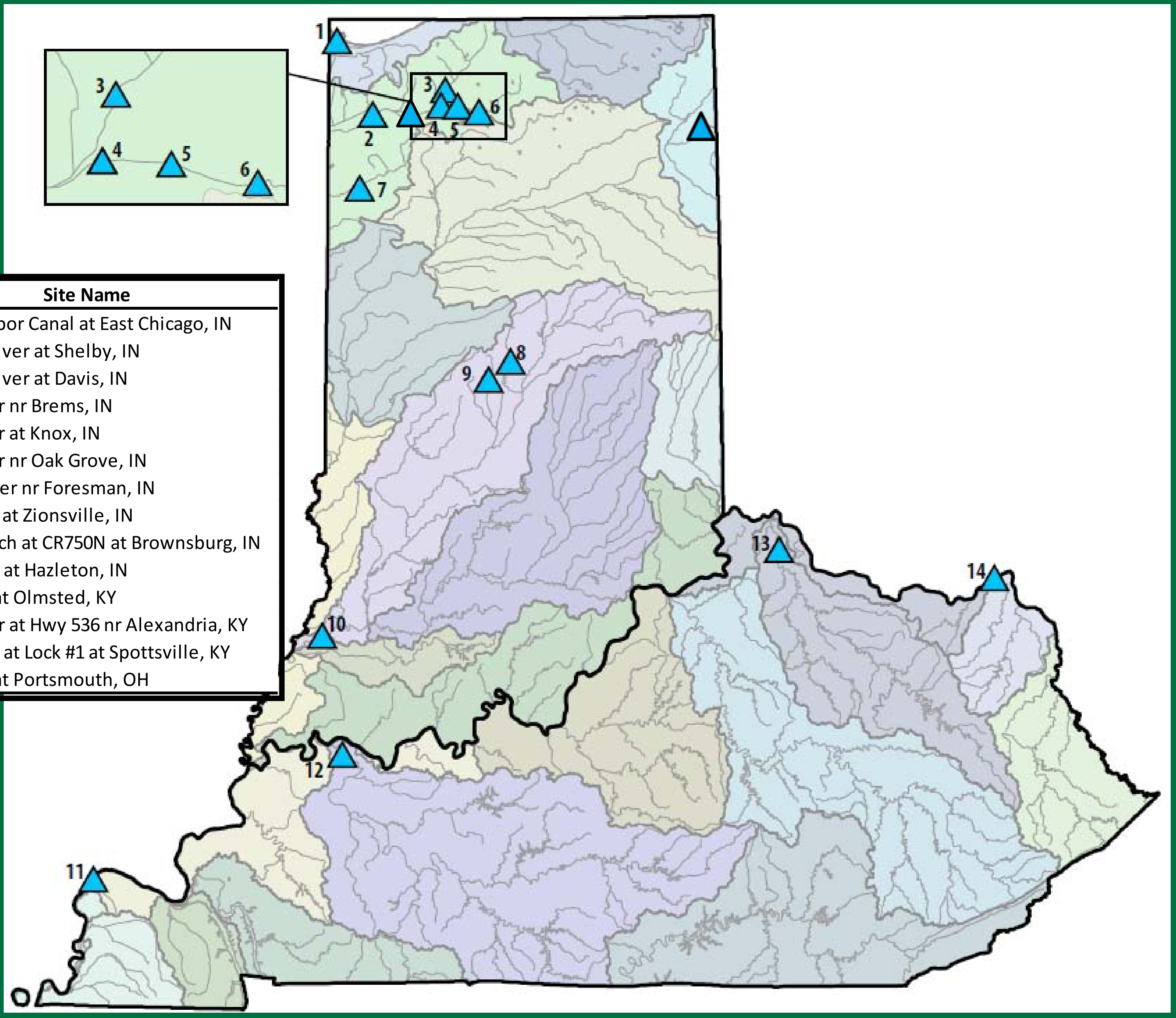






nrtwq.usgs.gov

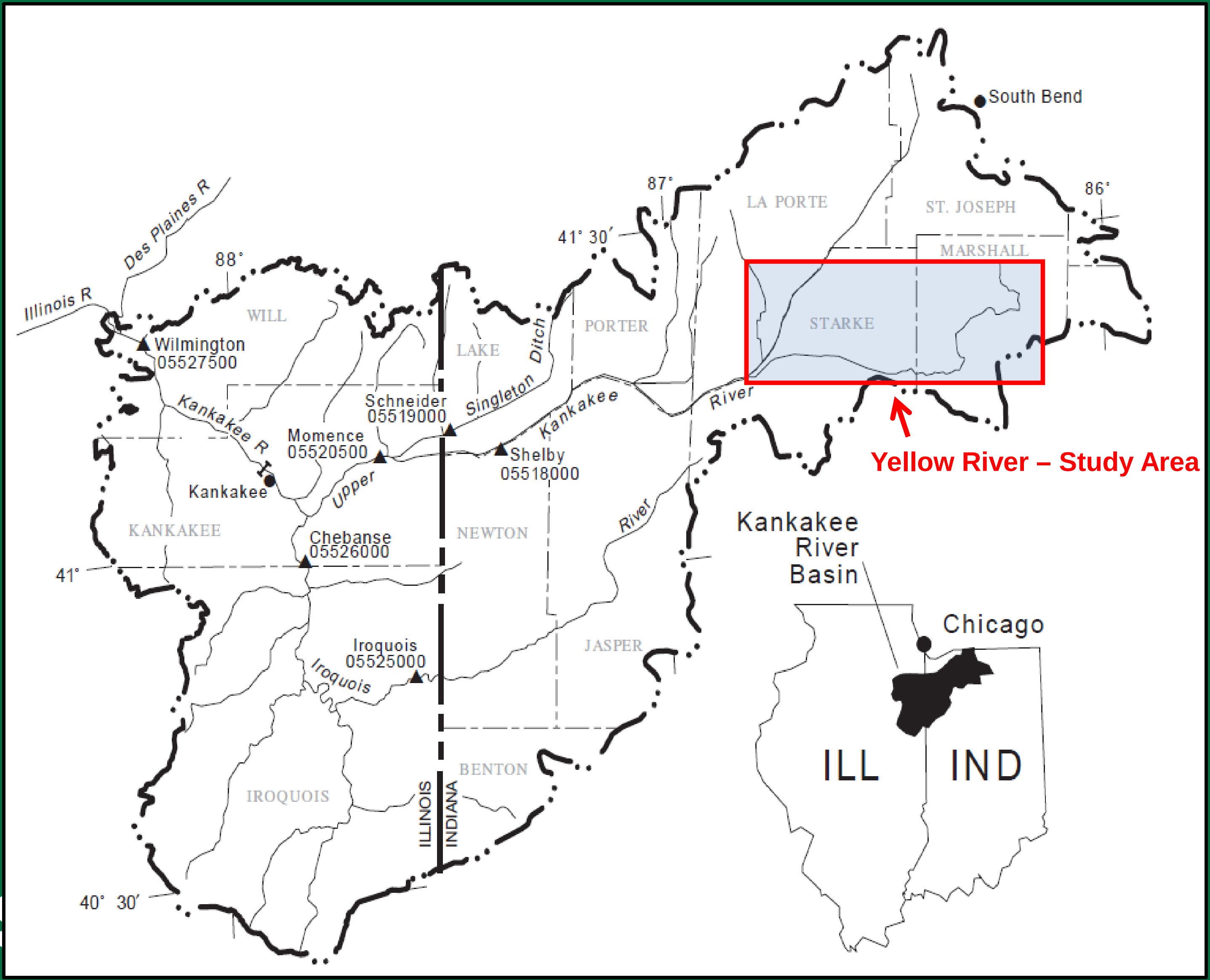
Active Super Gages



Map ID Number	Sation ID	Site Name
1	04092750	Indiana Harbor Canal at East Chicago, IN
2	05518000	Kankakee River at Shelby, IN
3	05515500	Kankakee River at Davis, IN
4	05517010	Yellow River nr Brems, IN
5	05517000	Yellow River at Knox, IN
6	05516665	Yellow River nr Oak Grove, IN
7	05524500	Iroquois River nr Foresman, IN
8	03353200	Eagle Creek at Zionsville, IN
9	03353420	School Branch at CR750N at Brownsburg, IN
10	03374100	White River at Hazleton, IN
11	03612600	Ohio River at Olmsted, KY
12	03254520	Licking River at Hwy 536 nr Alexandria, KY
13	03321500	Green River at Lock #1 at Spottsville, KY
14	03217200	Ohio River at Portsmouth, OH

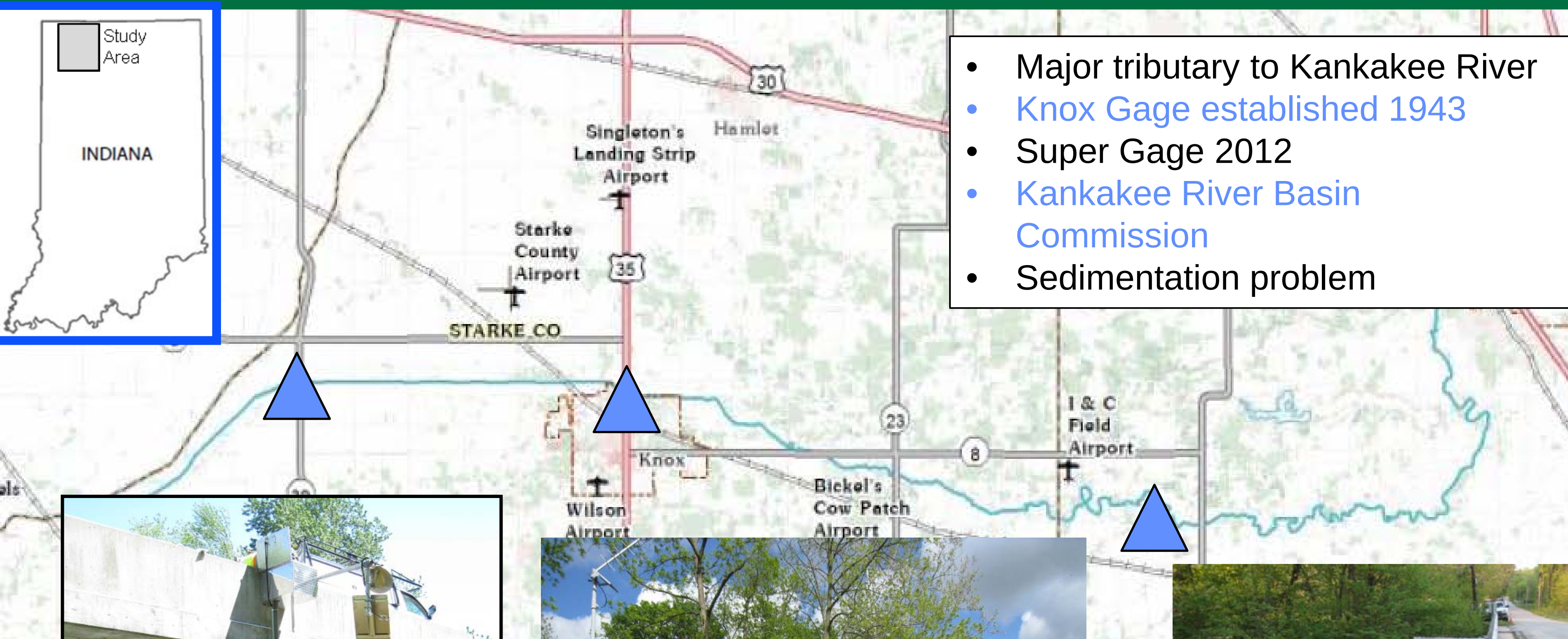
USGS

Yellow River Super Gages



Yellow River Super Gages

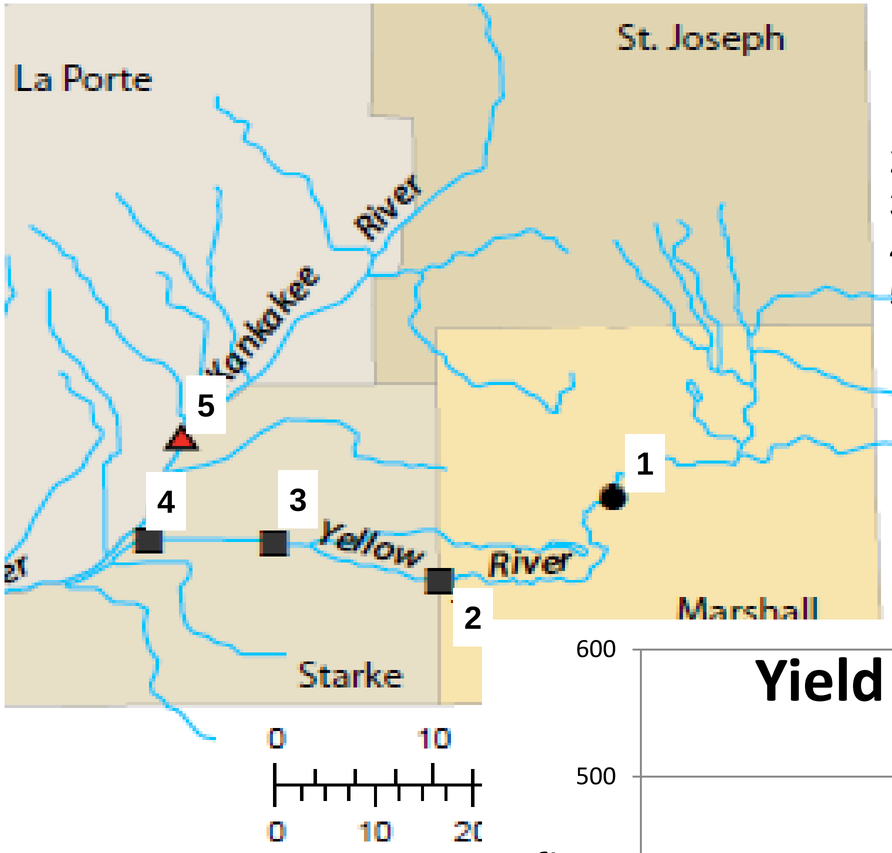
- Major tributary to Kankakee River
- Knox Gage established 1943
- Super Gage 2012
- Kankakee River Basin Commission
- Sedimentation problem



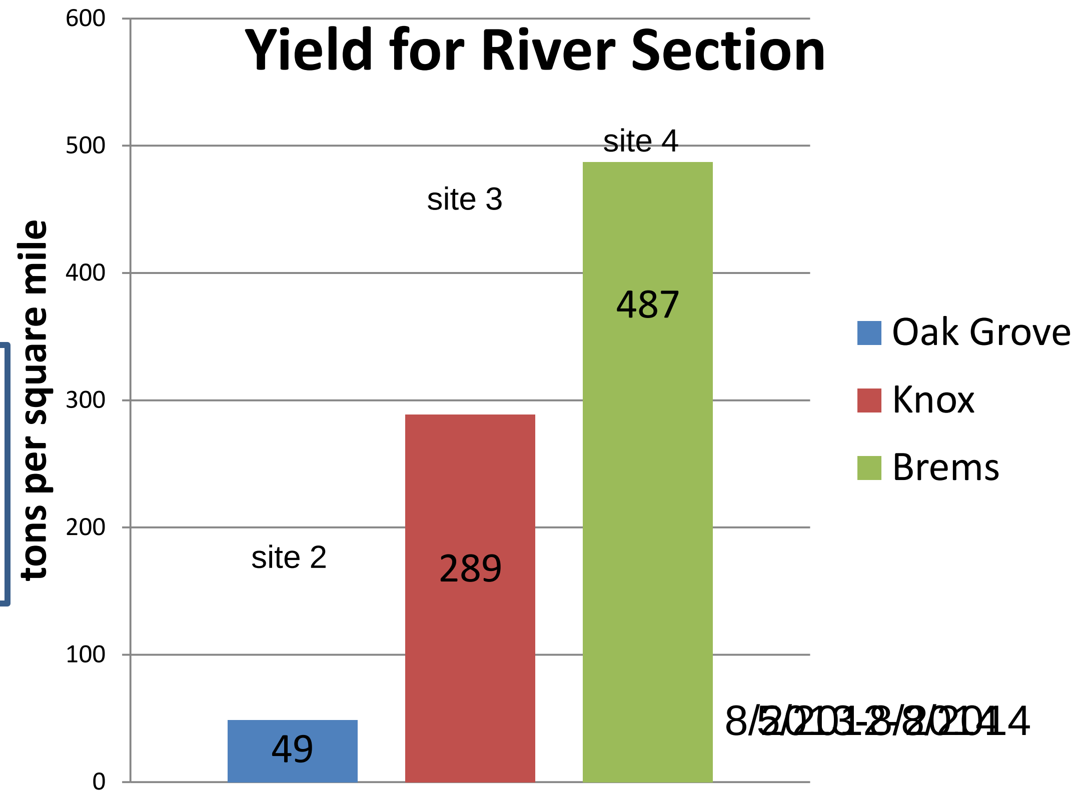
Yellow River near Brems, 05517010

Yellow River at Knox, 05517000

Yellow River near Oak Grove, 05516665



1. Yellow River at Plymouth 294 mi^2
2. Yellow River near Oak Grove 377 mi^2
3. Yellow River at Knox 435 mi^2
4. Yellow River near Brems 438 mi^2
5. Kankakee River at Davis 542 mi^2

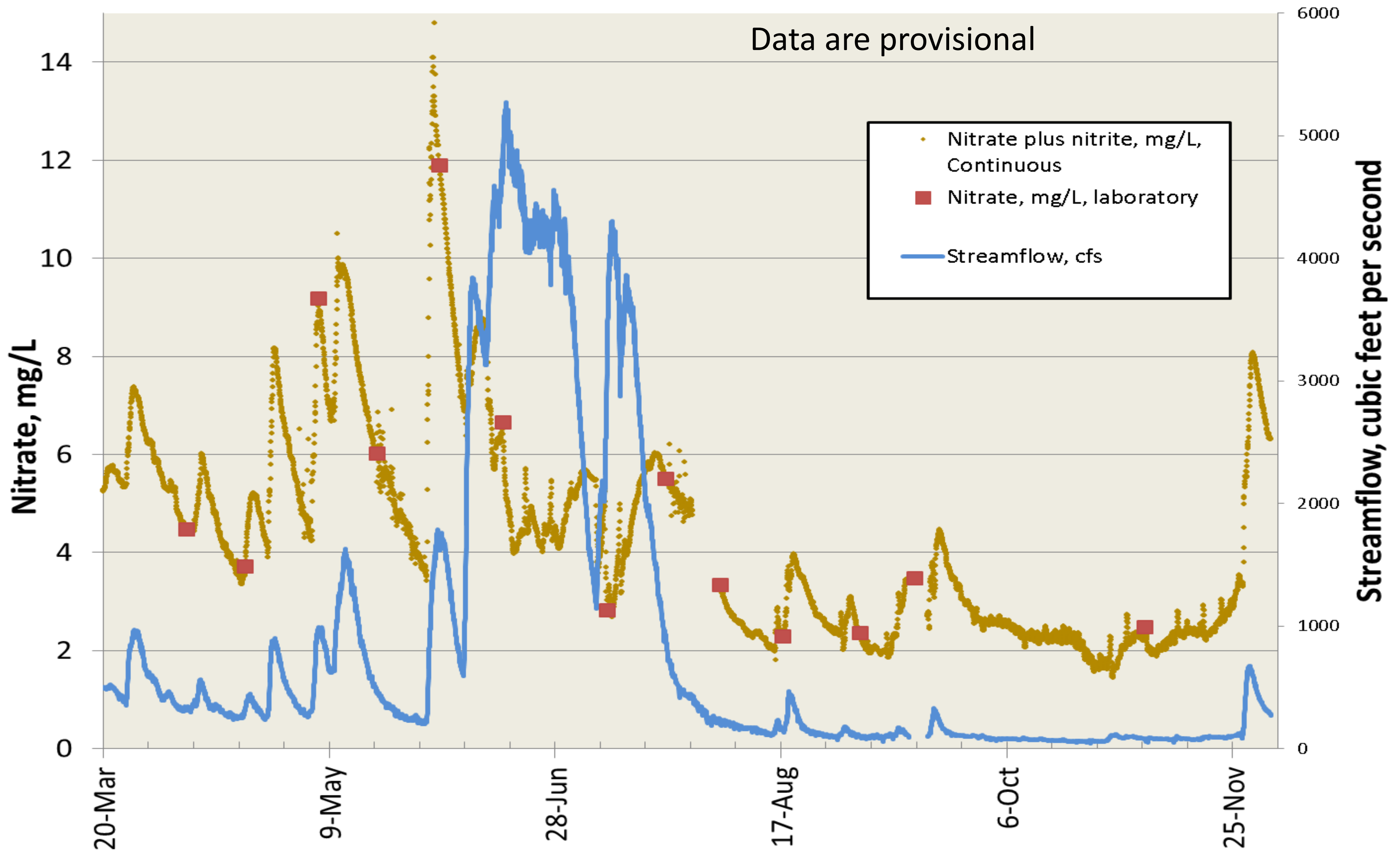


New mileage (between sites)

- Above Oak Grove 377 mi^2(above 2)
- Above Knox 58 mi^2 (between 2-3)
- Above Brems 3 mi^2 (between 3-4)

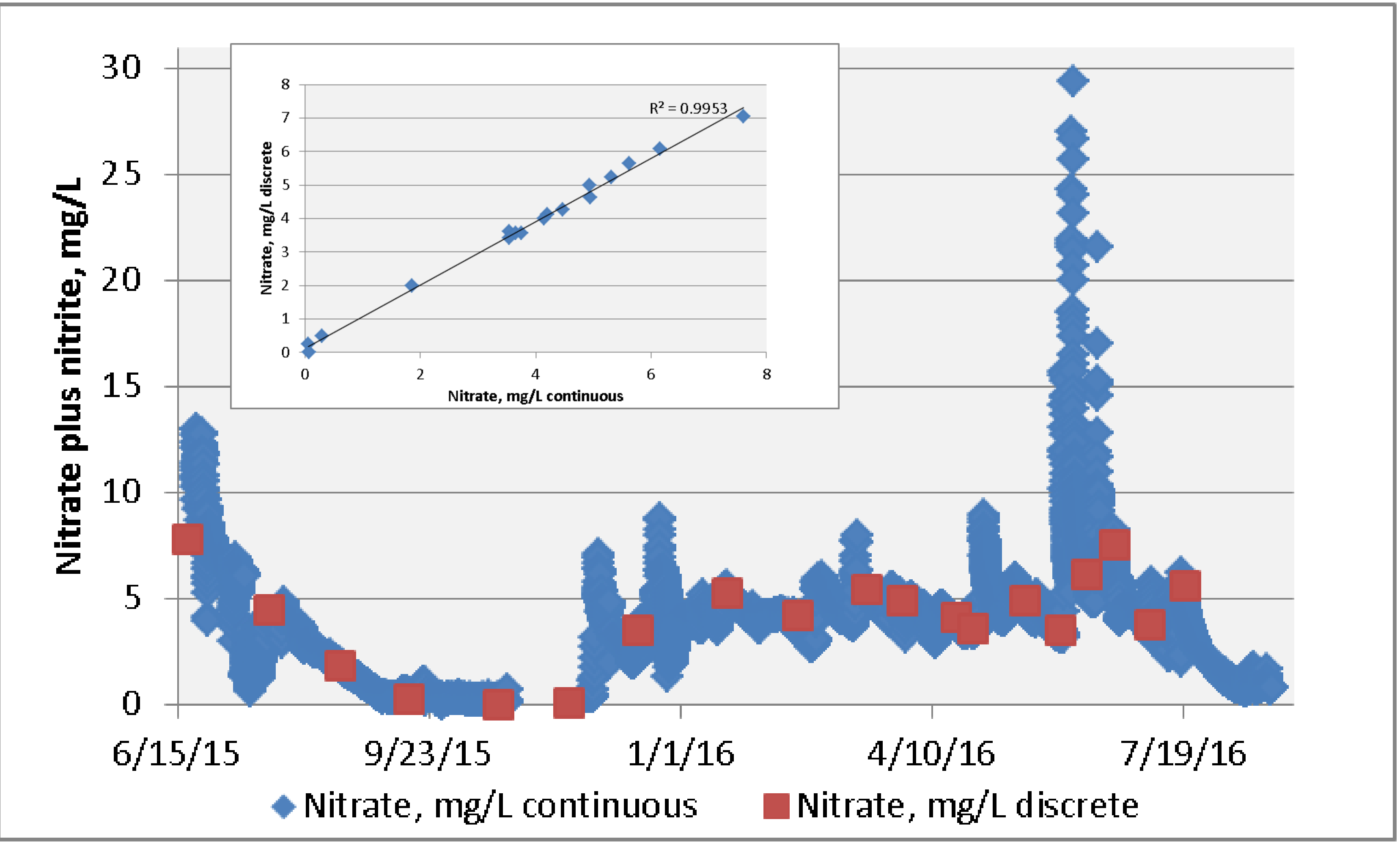
Data are provisional

Iroquois River Continuous Nitrate



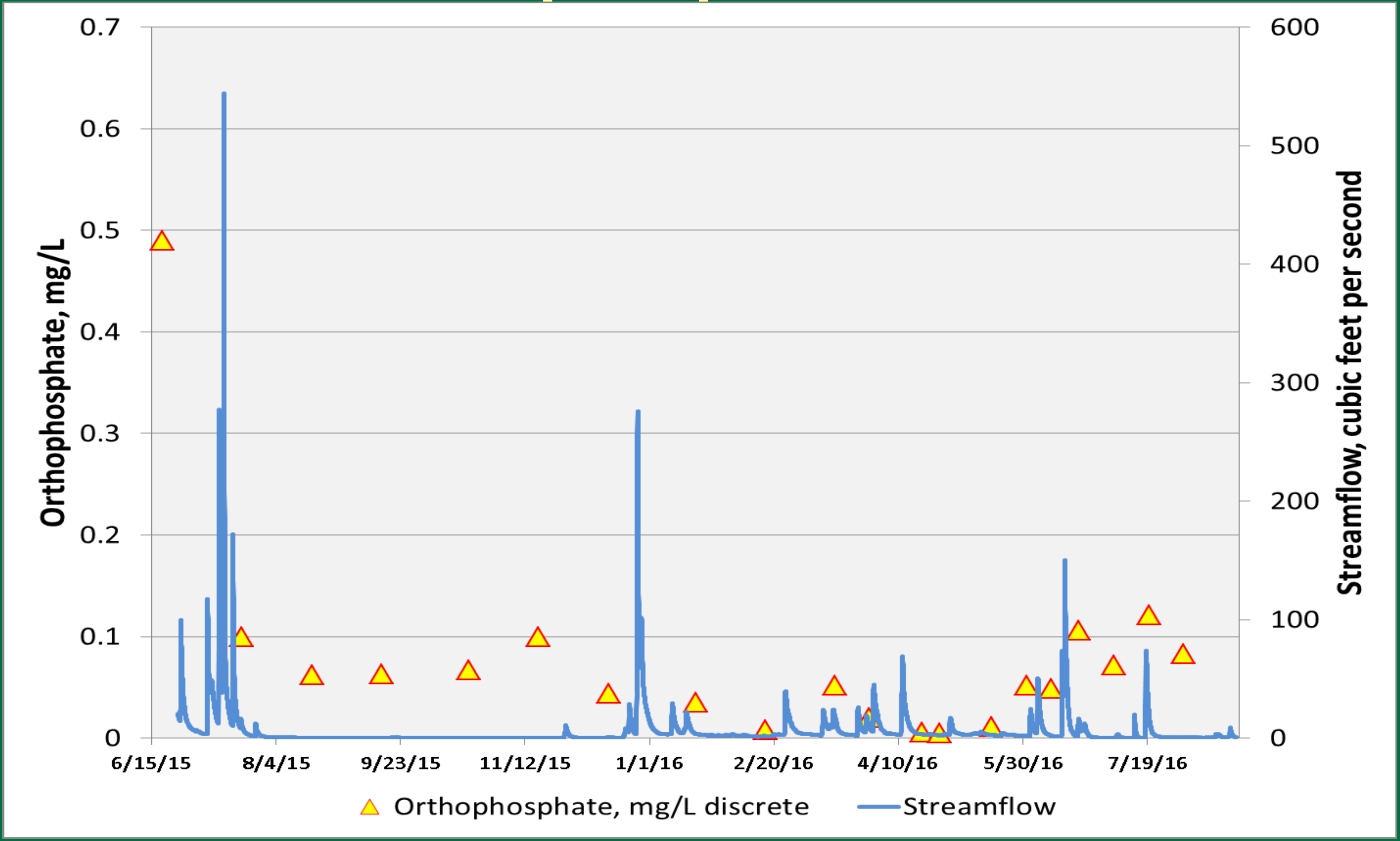
School Branch Data

Nitrate



Data are provisional

Continuous Orthophosphate - School Branch

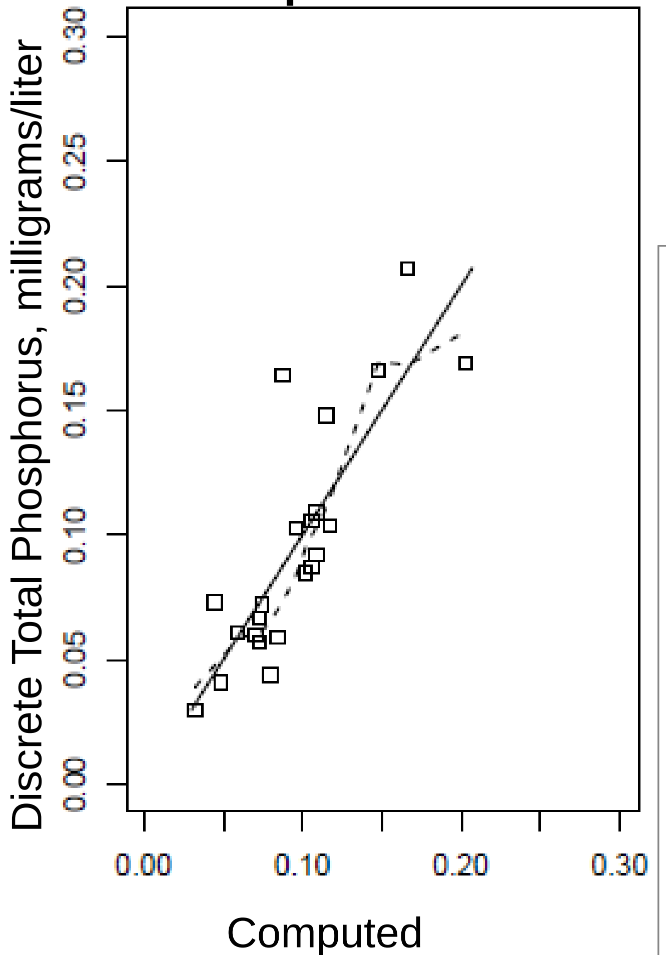


USGS

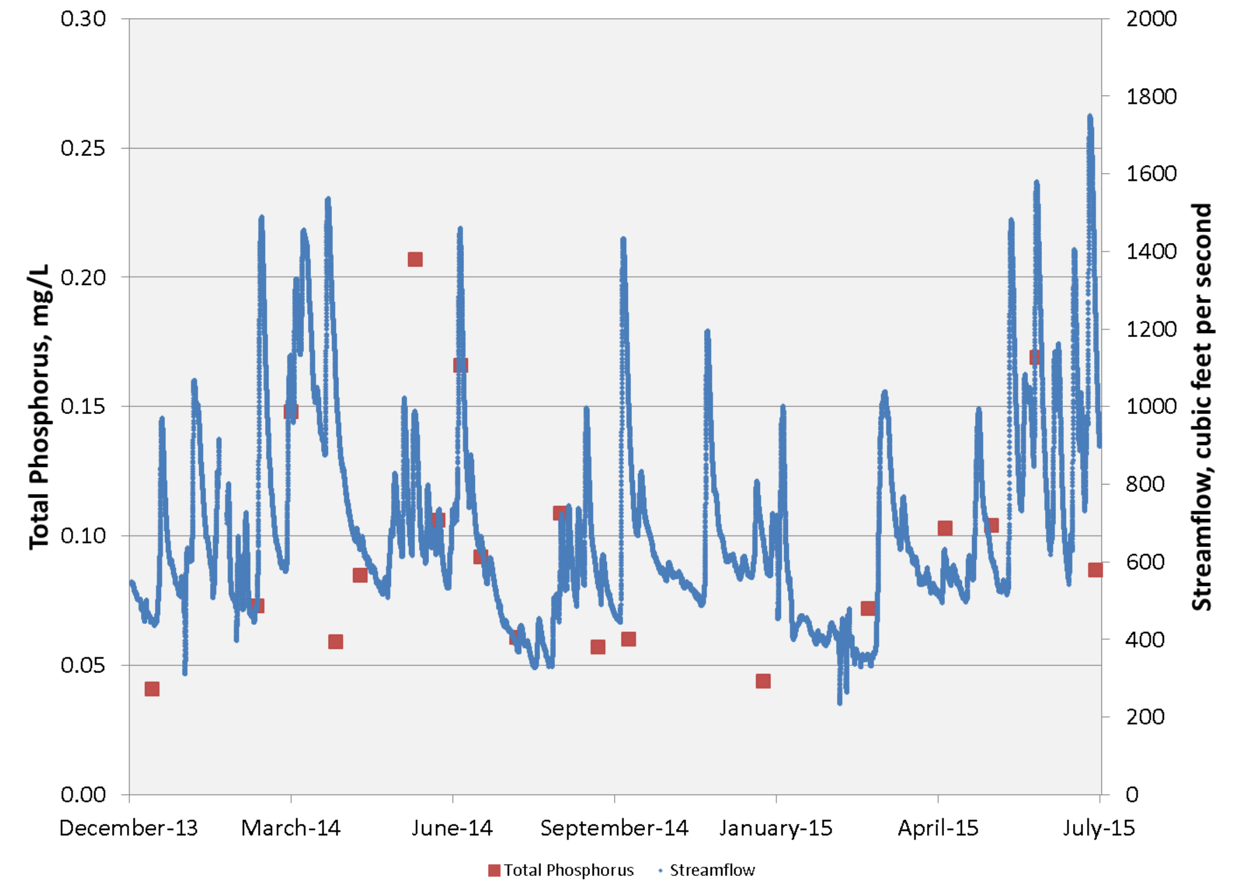
Data are provisional

Total Phosphorus - Kankakee at Davis

Total Phosphorus Model



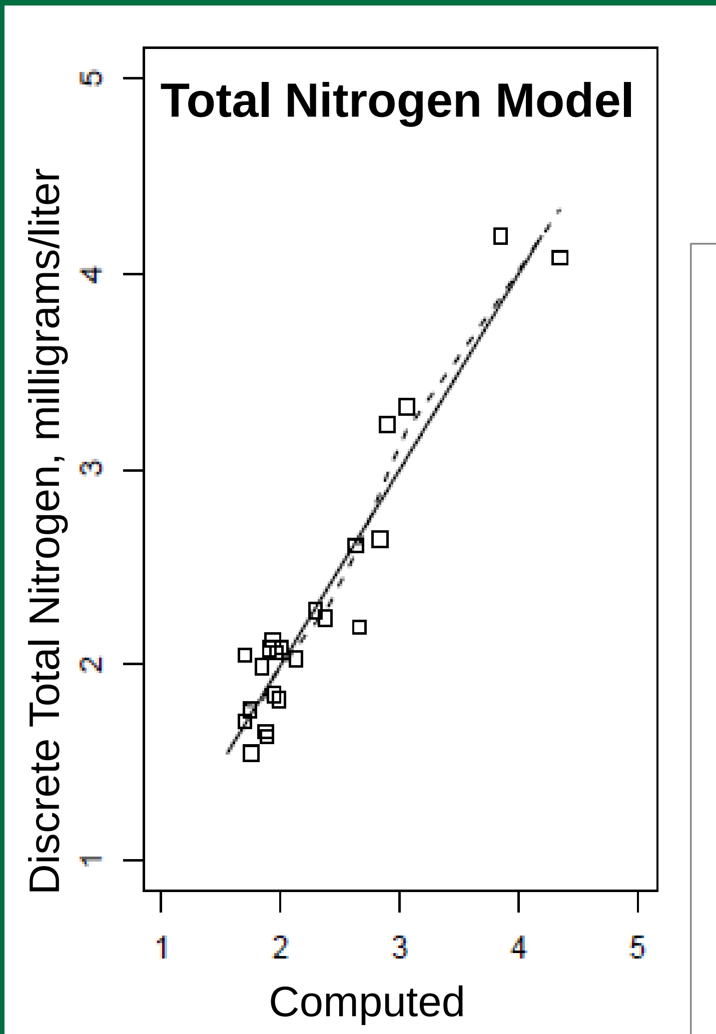
Tp= 0.0943(logturb)+0.00384



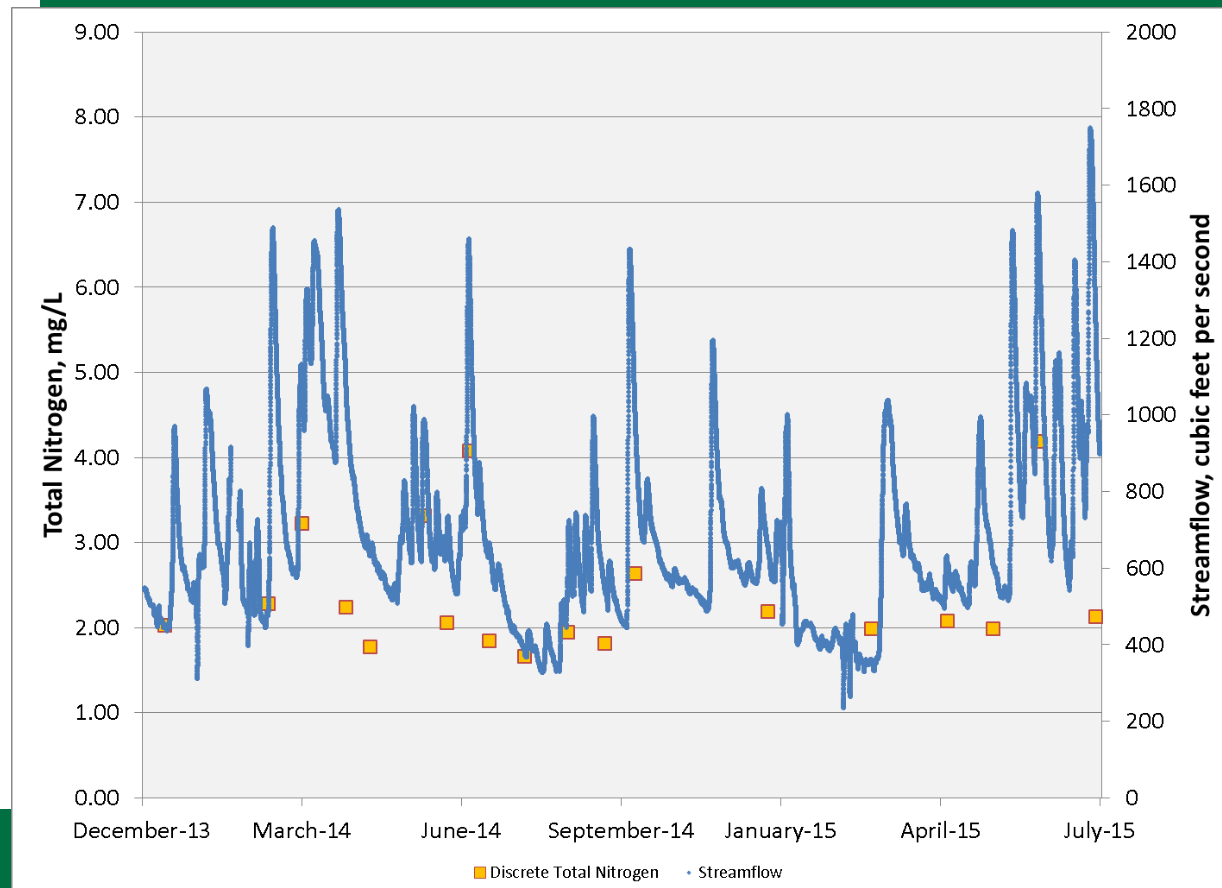
USGS

Data are provisional

Total Nitrogen - Kankakee at Davis

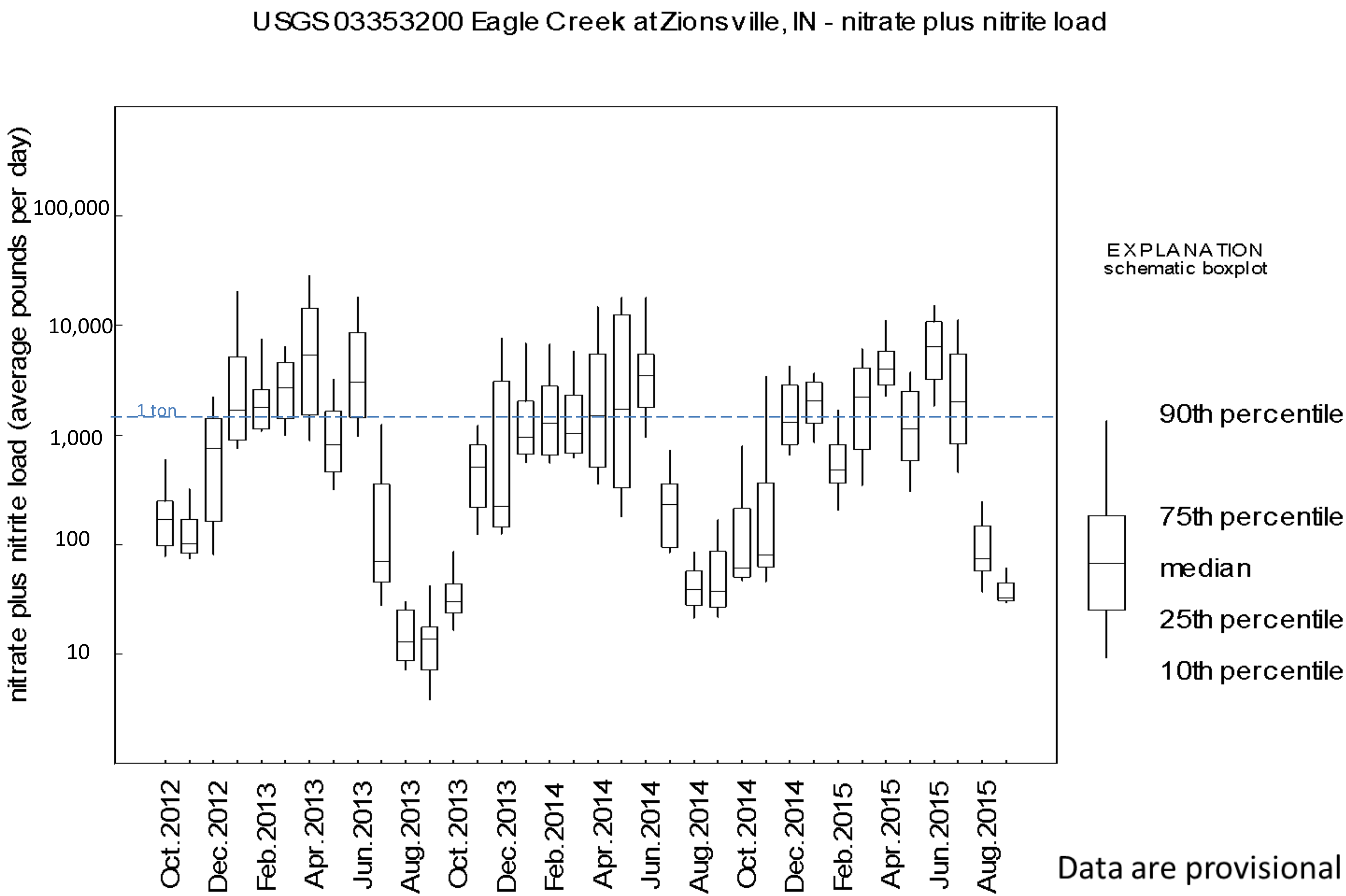


Tn= 1.482(no3)-0.191



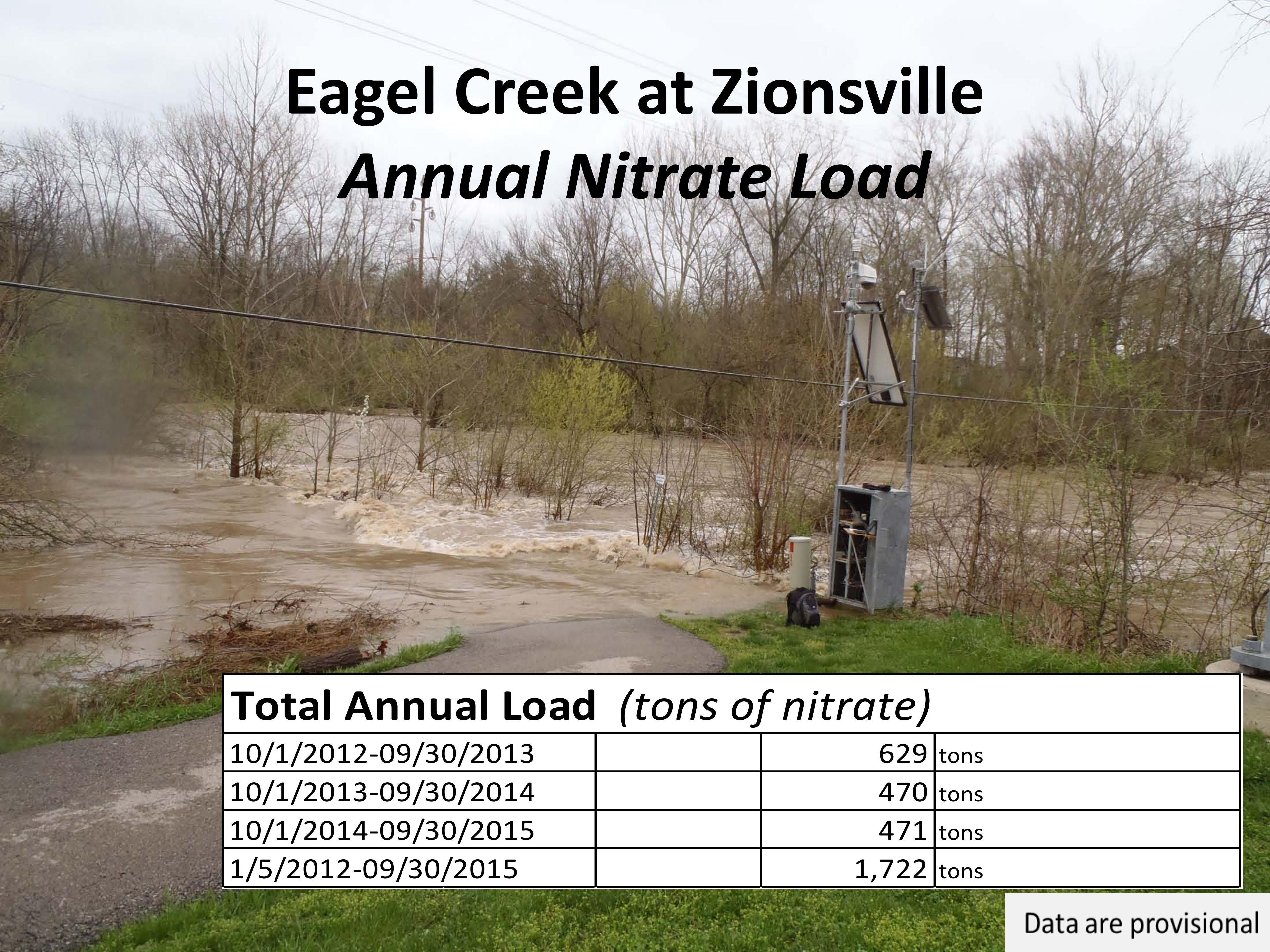
Data are provisional

Monthly Mean Load



Data are provisional

Eagel Creek at Zionsville
Annual Nitrate Load



Total Annual Load *(tons of nitrate)*			
10/1/2012-09/30/2013		629	tons
10/1/2013-09/30/2014		470	tons
10/1/2014-09/30/2015		471	tons
1/5/2012-09/30/2015		1,722	tons

Data are provisional

Thanks!

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- **Cooperators:** USGS NWQP, Town of Zionsville, Kankakee River Basin Commission, NIPSCO (through KRBC), Iroquois River Conservancy District, Indiana Department of Environmental Management, Great Lakes Restoration Initiative, US Army Corps of Engineers, Kentucky Sanitation District, KY Governor’s Office of Agricultural Policy

3rd Quarter
September 6, 2016

SJRBC

St. Joseph River Basin Commission

Next Meeting
December 6th, 2016

SJRBC

St. Joseph River Basin Commission