




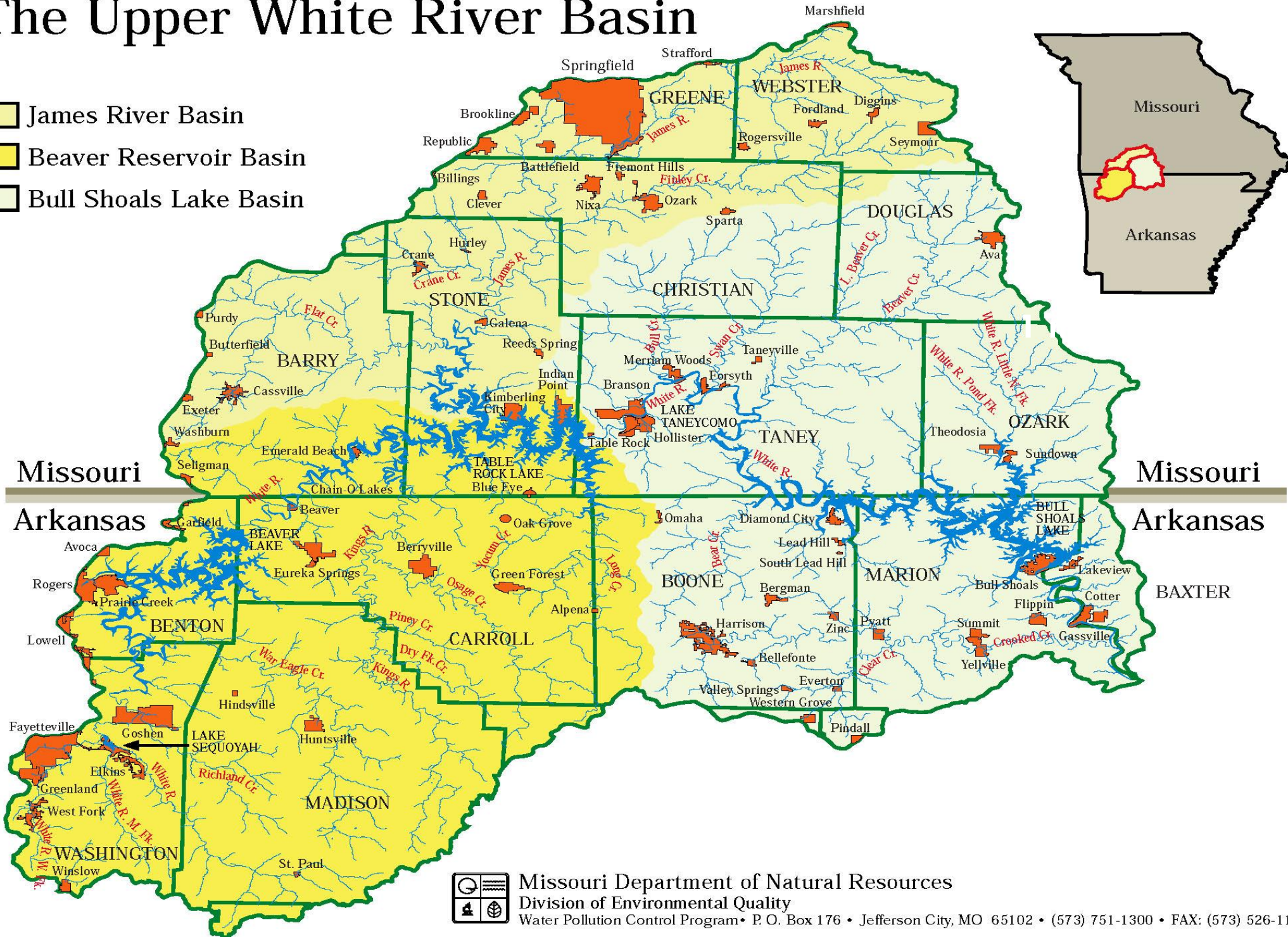


OZARKS WATER WATCH

Protecting and Preserving our Ozarks Heritage

The Upper White River Basin

-  James River Basin
-  Beaver Reservoir Basin
-  Bull Shoals Lake Basin



Missouri Department of Natural Resources
 Division of Environmental Quality

Water Pollution Control Program • P. O. Box 176 • Jefferson City, MO 65102 • (573) 751-1300 • FAX: (573) 526-1144



OZARKS WATER WATCH



OUR VISION

With your help, we will work together to make Beaver, Table Rock, Taneycomo and Bull Shoals lakes the four cleanest manmade lakes in North America



OZARKS WATER WATCH

OUR MISSION

To promote water quality in the upper White River watershed through collaboration on research, education, public policy and action projects basin-wide in both Arkansas and Missouri.



PROGRAM PRIORITIES

- 1. MONITOR AND REPORT ON WATER QUALITY IN THE UPPER WHITE RIVER BASIN.**
- 2. IMPROVE ONSITE AND DECENTRALIZED WASTEWATER TREATMENT SYSTEMS.**
- 3. PROVIDE WATER QUALITY INFORMATION AND EDUCATION TO THE PUBLIC THROUGH COMMUNICATION, PROJECTS AND EVENTS.**

ISSUES OF THE UPPER WHITE RIVER WATERSHED

- **POPULATION, GROWTH AND DEVELOPMENT**

HOME TO OVER A MILLION PEOPLE, THE UPPER WHITE RIVER BASIN IS COMPRISED OF 10 COUNTIES IN NORTHWEST ARKANSAS AND 9 IN SOUTHWEST MISSOURI, COVERING AN AREA OF OVER 14,000 SQUARE MILES.

- **URBAN CONCERNS:**

IMPERVIOUS AREAS, INCREASED RUNOFF, AND HIGH CONCENTRATIONS OF URBAN POLLUTANTS

- **RURAL CONCERNS:**

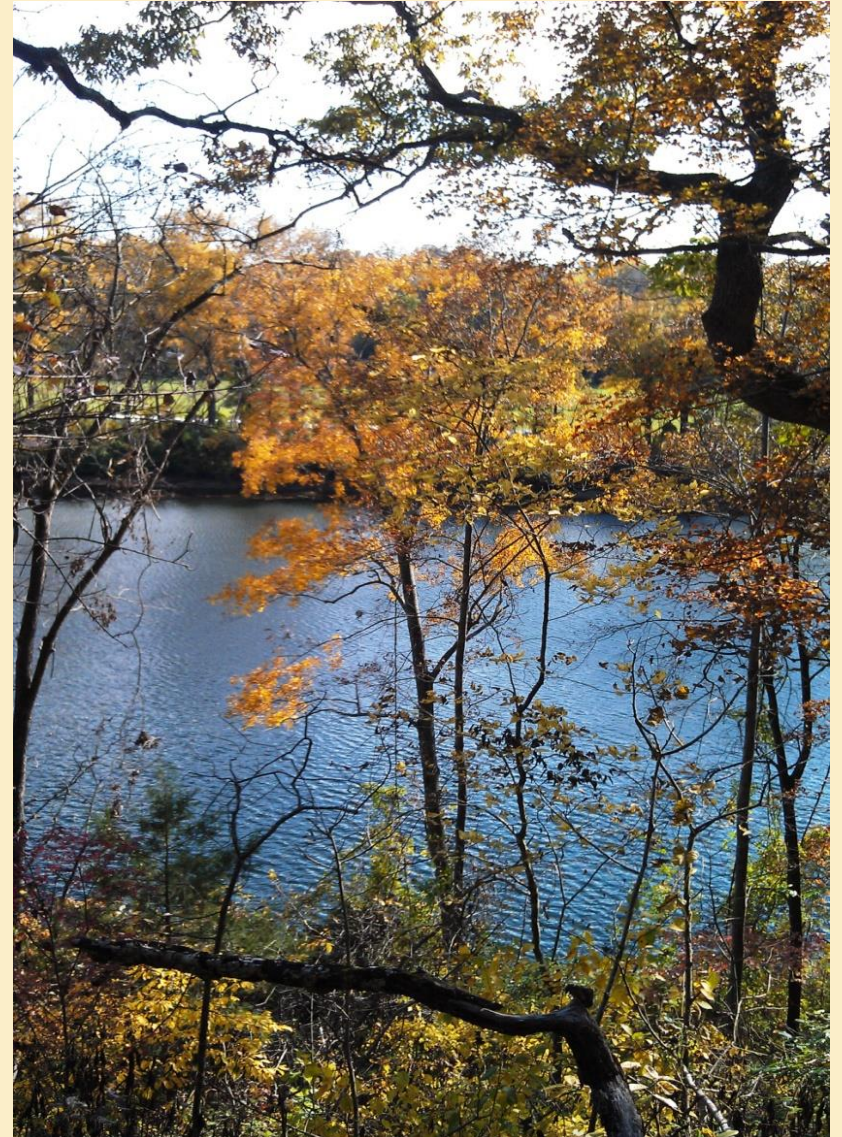
INCREASED NUTRIENTS SUCH AS PHOSPHORUS AND NITROGEN

- **SEPTIC & WASTEWATER SYSTEMS:**

REGIONAL SOIL ATTRIBUTES ARE GENERALLY ROCKY AND THIN WITH VERY LITTLE TOPSOIL AND CONVENTIONAL SEPTIC SYSTEMS CAN ALLOW EFFLUENT TO SURFACE OR LEACH DIRECTLY TO GROUND WATER.



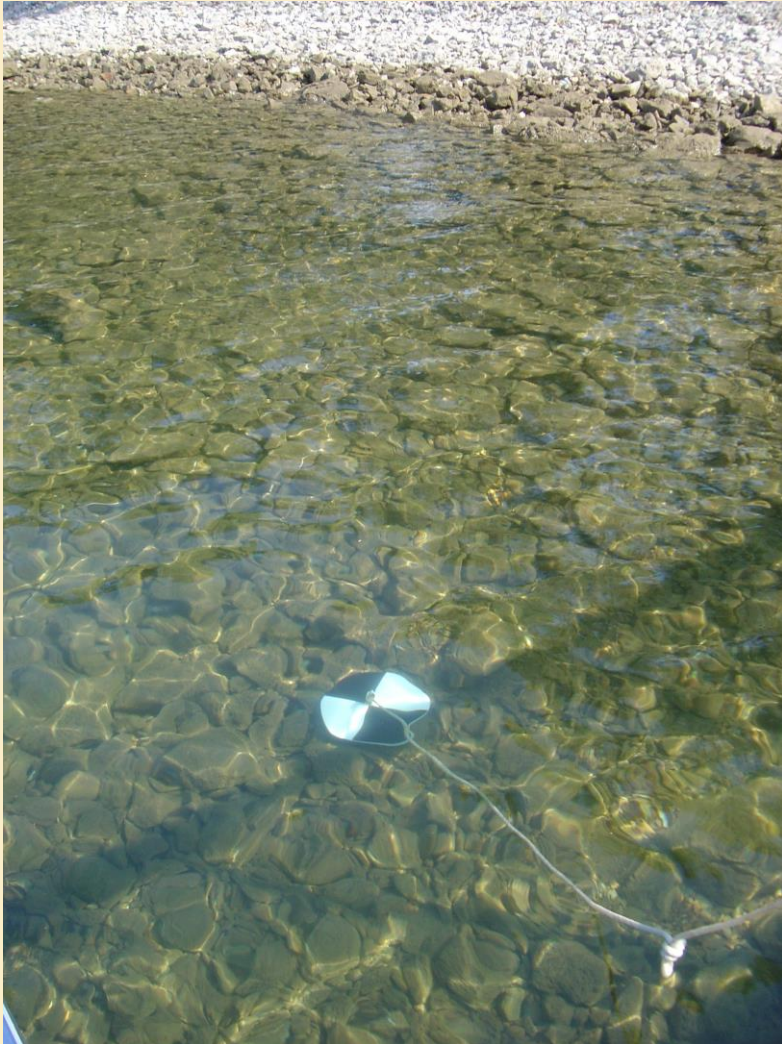
THE OZARKS ARE BLESSED WITH CLEAN WATER!





OZARKS WATER WATCH

BUT PROBLEMS REMAIN.....



WHAT IS THE PROBLEM?

✘ Nutrients!



• Sediment!

Table Rock Lake - 1999



“WE” MADE A DIFFERENCE!!!

In 2001, the Missouri Clean Water Commission placed phosphorous limits of 0.5 ppm on the discharges from wastewater treatment plants in the Table Rock and Taneycomo lake’s watersheds. Since that time there have been no major algae blooms on Table Rock Lake.

Table Rock Lake - 2013



STATUS OF THE WATERSHED REPORT

To answer the question:

“How’s the water?”

Status of the Watershed
2019  **OZARKS WATER WATCH**

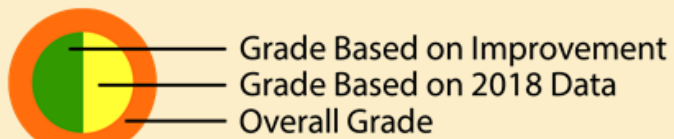


Summarizing 2018 Water Quality in the Upper White River Basin

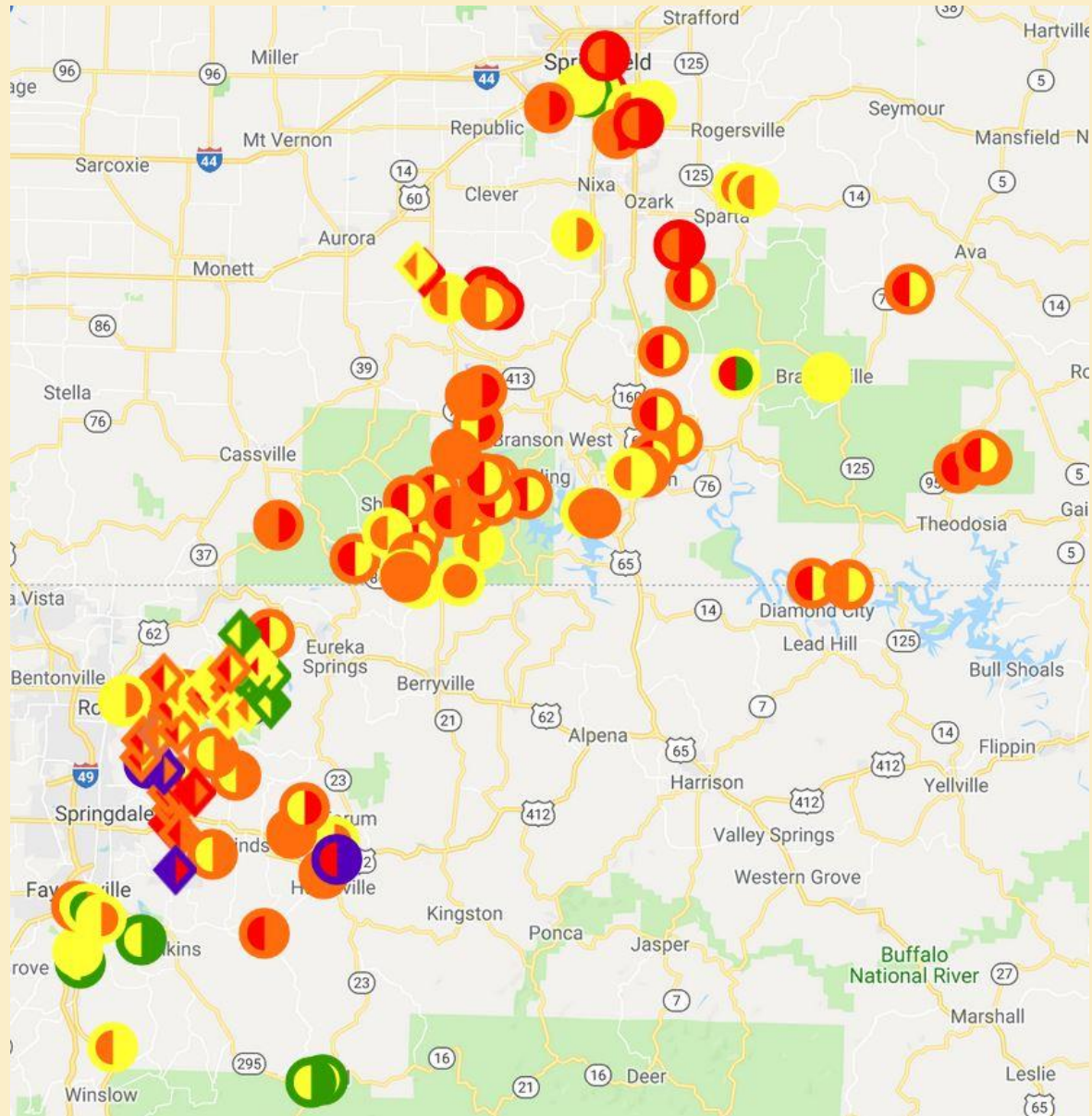
Online interactive map at: www.ozarkswaterwatch.org

ONLINE MAP - SITES 2012 THRU 2018

- ✘ 3,400 Monitoring Events
- ✘ 120 Lake and Stream Sites



Sites represented by diamonds  have limited data availability



VOLUNTEER SAMPLING

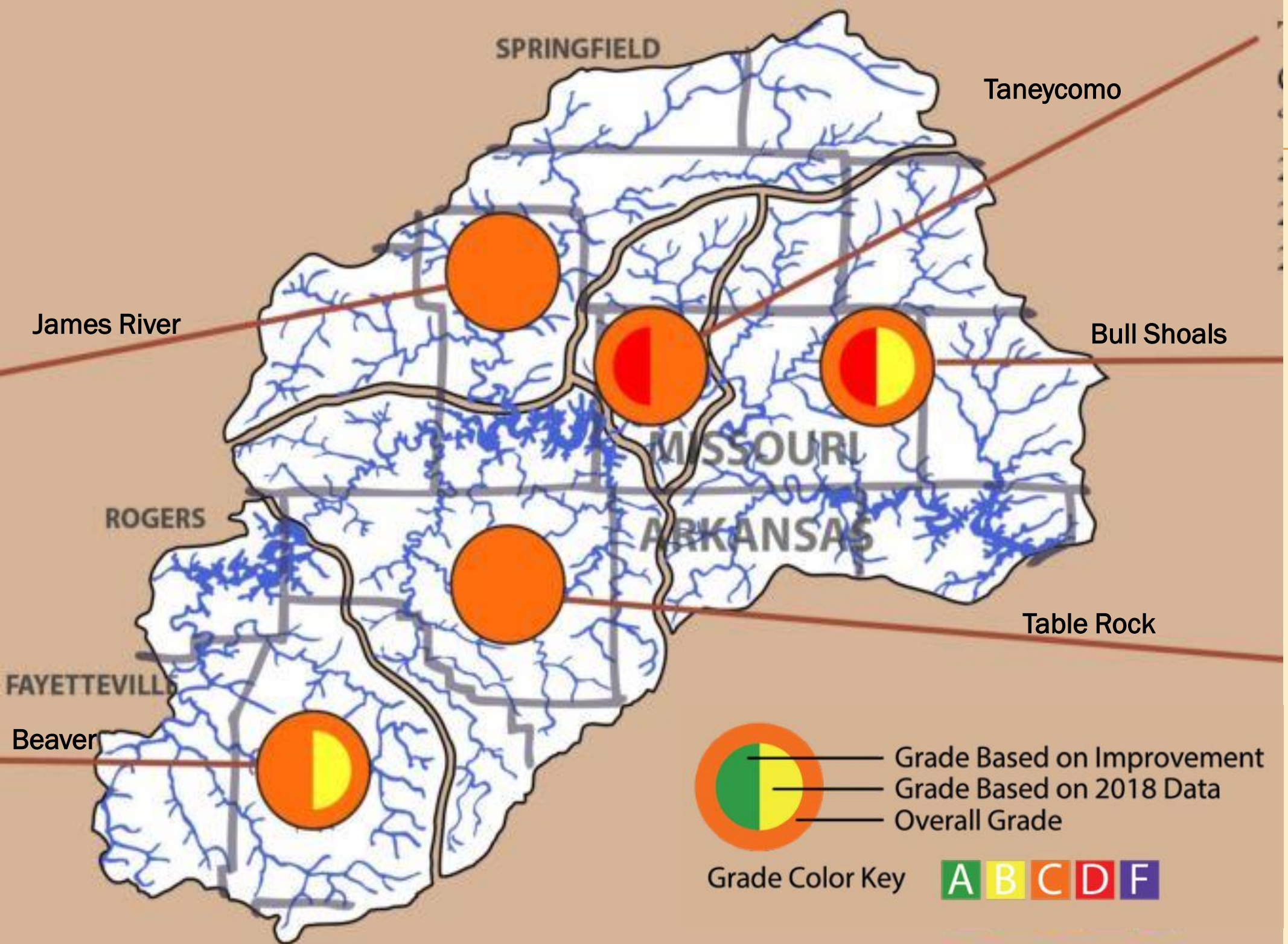
- ✘ Missouri & Arkansas
- ✘ Lakes & Streams



METRICS OF WATER QUALITY

- ✘ Water Clarity (Lakes)
- ✘ Dissolved Oxygen
- ✘ Aquatic Invertebrates (Streams)
- ✘ Phosphorous (Lab tested)
- ✘ Nitrogen (Lab tested)





BASIN REPORT CARD

Water quality in the Upper White River Basin is generally very good and safe for the “intended uses” such as swimming, fishing, boating, drinking water, etc. However, largely because of increases in the nutrient nitrogen and decreases in water clarity, the overall basin earns a “C” grade.


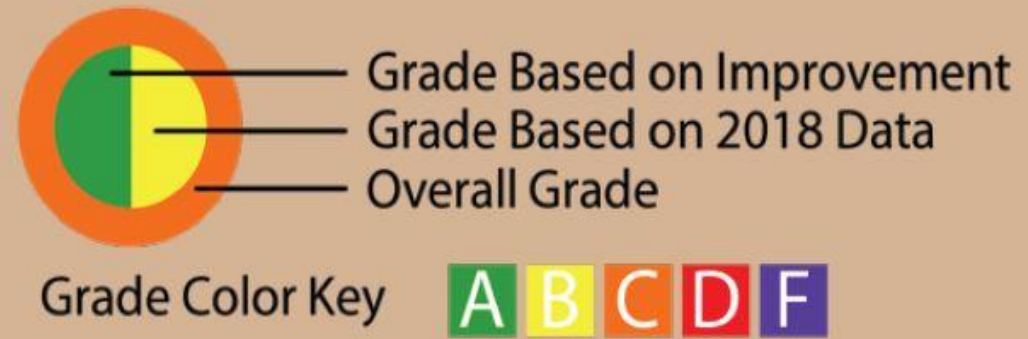
Upper White River Basin Water Quality Report Card			
	Water Quality Improvement	2018 Water Quality	Overall Grade
			
Beaver Watershed	C	B	C
Bull Shoals Watershed	D	B	C
James River Watershed	C	C	C
Table Rock Watershed	C	C	C
Taneycomo Watershed	D	C	C

TABLE ROCK LAKE



← 85 Table Rock 11

Site

85 Table Rock 11

Improvement Score - 2018 Score - Overall Score

BDC

2018 Secchi (feet)

3.7

2012-2017 Secchi (feet)

3.4

2018 Total Nitrogen (mg/L)

0.846

2012-2017 Total Nitrogen (mg/L)

0.922

2018 Total Phosphorus (mg/L)

0.033

2012-2017 Total Phosphorus (mg/L)

0.044

Region

Table Rock

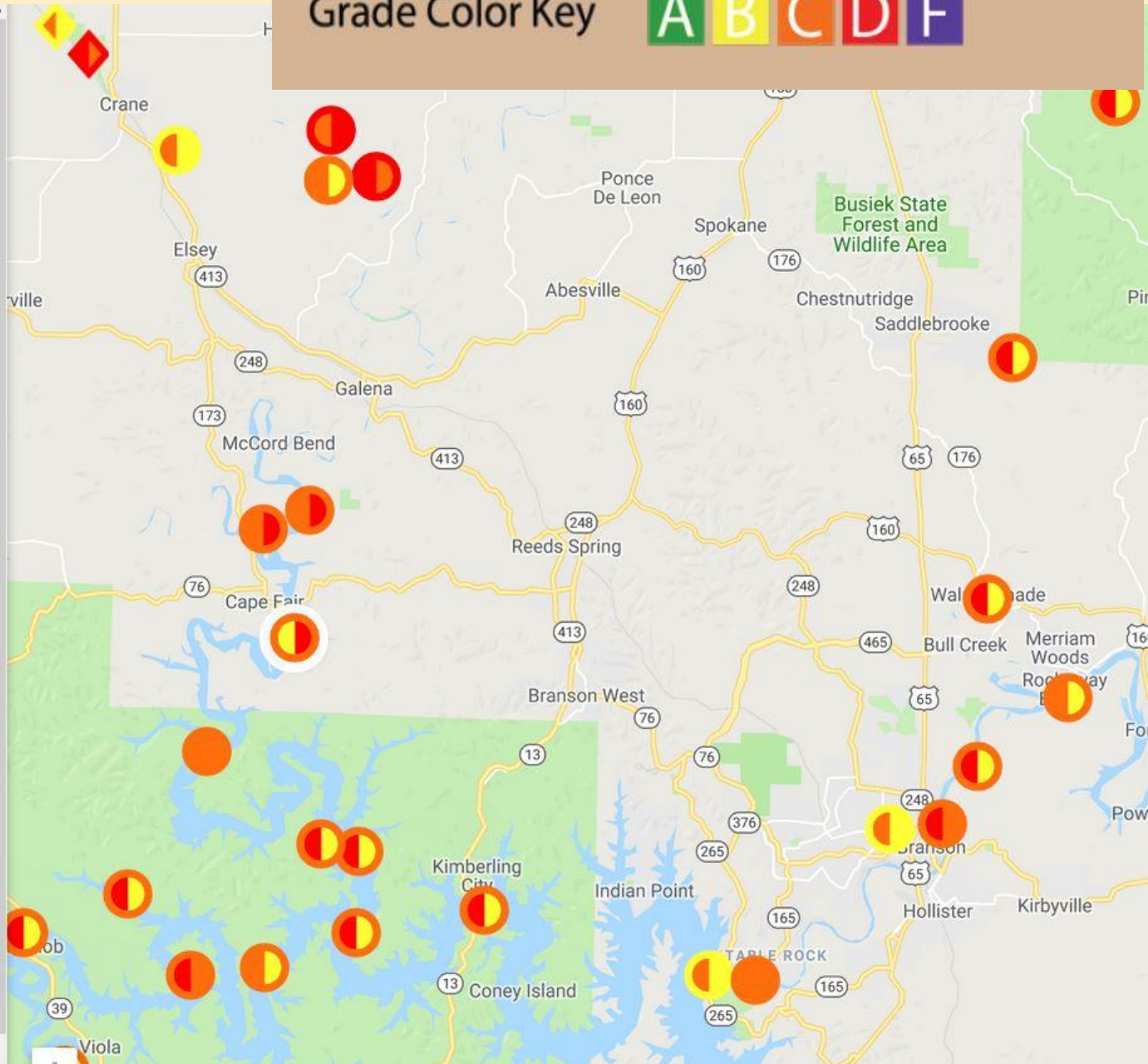
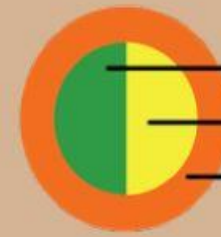


TABLE ROCK LAKE

Table Rock Lake Watershed

The 23 sites in the Table Rock Lake watershed had overall grades in the “B” and “C” range. While most sites received a “B” grade for 2018 water quality, these grades were lower than in the 2012-2017 period. Water clarity in the lake, for example, decreased by an average of 6 inches in 2018 and by more than a foot at 6 sites.

LAKE TANEYCOMO



Grade Based on Improvement
Grade Based on 2018 Data
Overall Grade

Grade Color Key



← 25 Bull Creek

Site

25 Bull Creek

Improvement Score - 2018 Score - Overall Score

DBC

2012-2017 Dissolved Oxygen (mg/L)

12

2018 Total Nitrogen (mg/L)

0.646

2012-2017 Total Nitrogen (mg/L)

0.41

2018 Total Phosphorus (mg/L)

0.003

2012-2017 Total Phosphorus (mg/L)

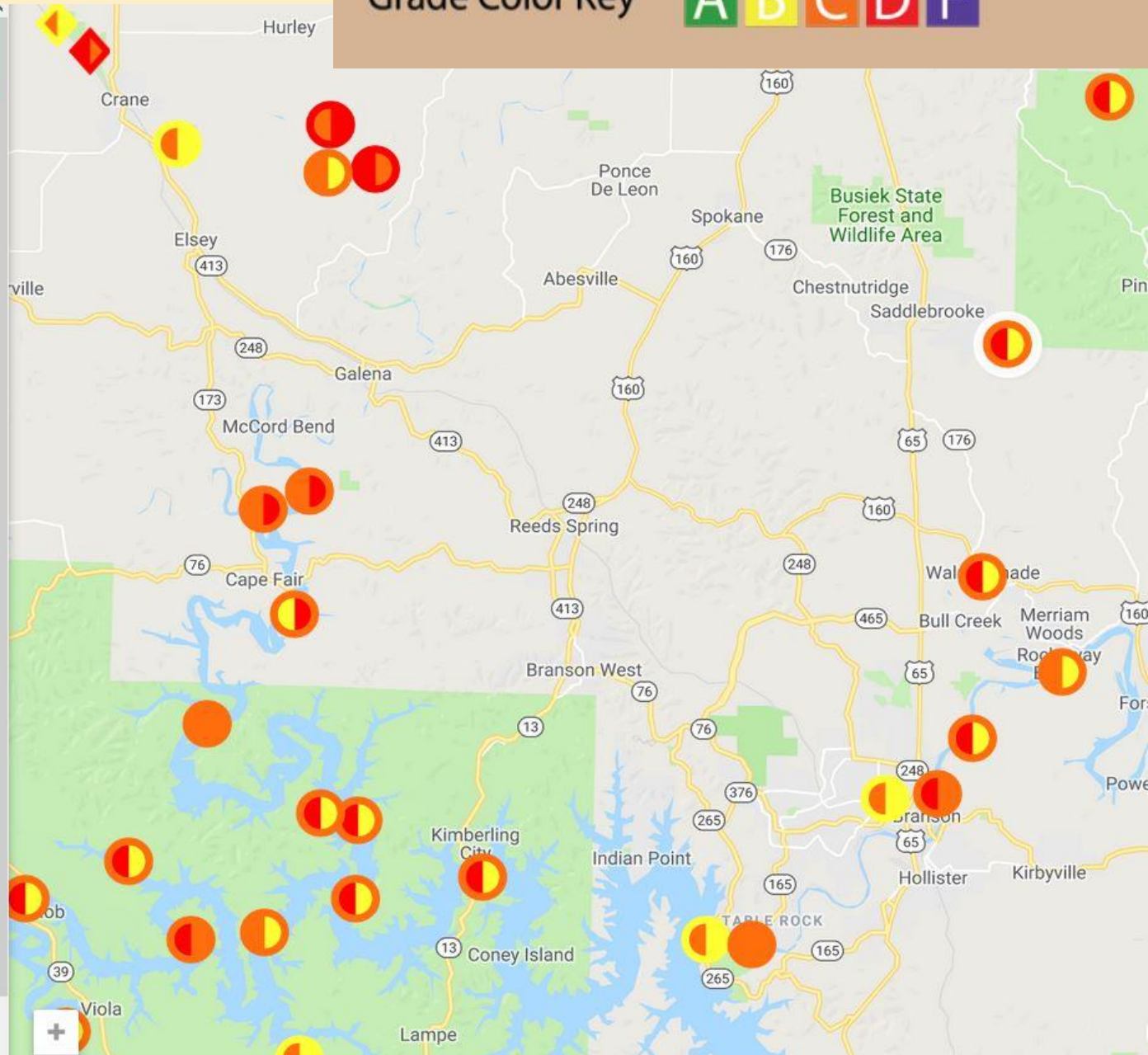
0.003

2012-2017 Invertebrate Score

30.47

Region

Taneycomo

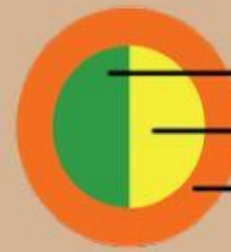


LAKE TANEYCOMO

Taneycomo Watershed

Of the 10 sites in this watershed, only 1 scored better than a “C” overall. Nitrogen was higher in 2018 than during the 2012-2017 period at 8 of the 10 sites. High nitrogen concentrations in 2 spring sites had a strong influence on the watershed’s overall 2018 grade, which would otherwise have been a “B”.

BEAVER LAKE



Grade Based on Improvement
Grade Based on 2018 Data
Overall Grade

Grade Color Key



← 219 Holman Creek Downstr... ↗

Site
219 Holman Creek Downstream of Huntsville

Improvement Score - 2018 Score - Overall Score
DFF

2018 Total Nitrogen (mg/L)
4.61

2012-2017 Total Nitrogen (mg/L)
3.822

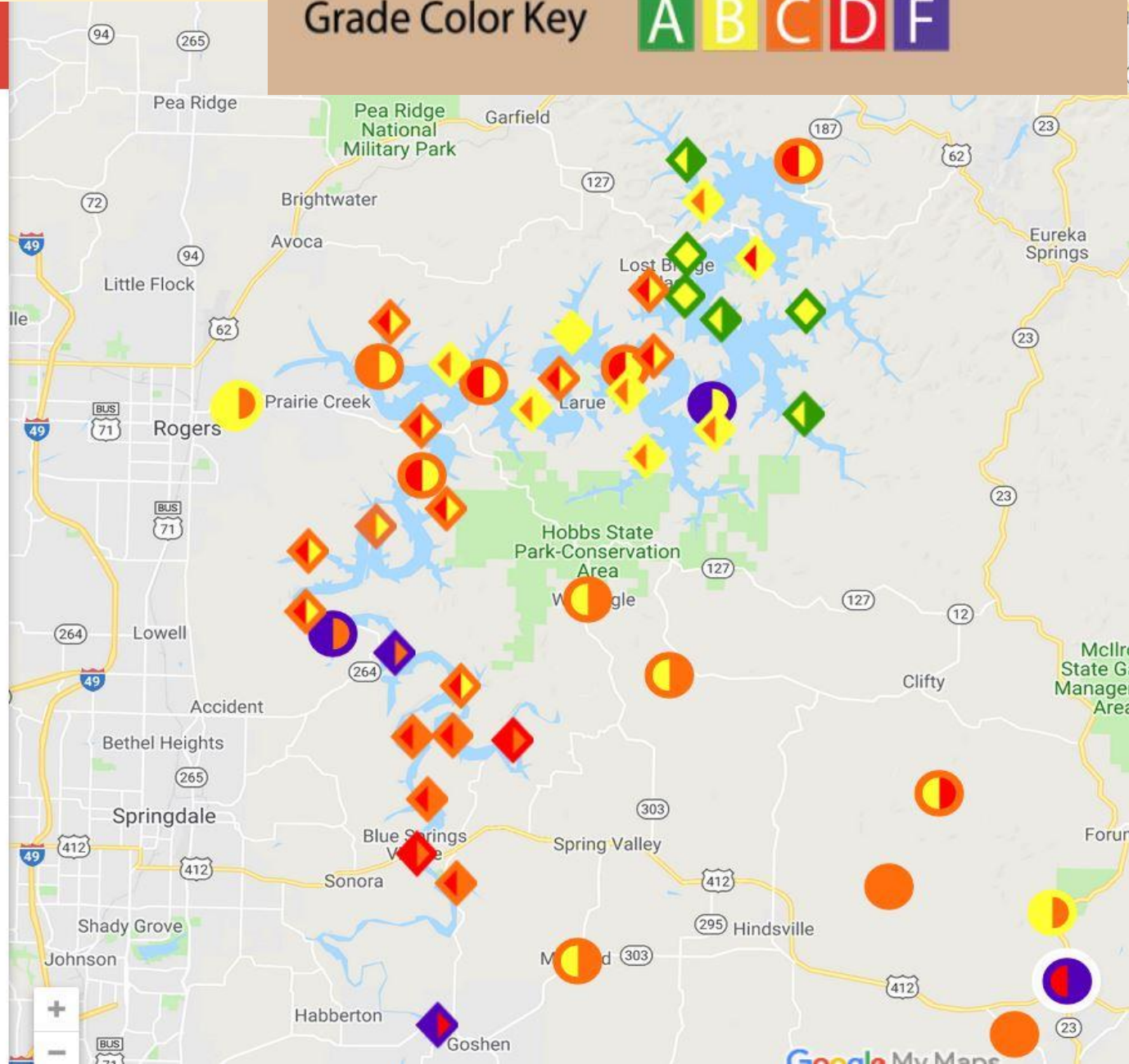
2018 Total Phosphorus (mg/L)
0.123

2012-2017 Total Phosphorus (mg/L)
0.086

Region
Beaver

Latitude
36.12445

Longitude
-93.73421

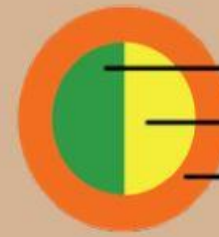


BEAVER LAKE

Beaver Lake Watershed

Half of the 120 sites monitored in the Upper White River Basin were in the Beaver Lake watershed. Of the 11 sites receiving an overall “A” grade, 10 were in this region. However this region also had the only sites with an overall “F” grade, 6 in all. All of these sites had problems with excessive nutrients and 5 had increased concentrations in 2018.

JAMES RIVER



Grade Based on Improvement

Grade Based on 2018 Data

Overall Grade

Grade Color Key



← 50 South Creek



Site

50 South Creek

Improvement Score - 2018 Score - Overall Score

ABA

2018 Invertebrate Score

25.69

2012-2017 Invertebrate Score

16.23

Region

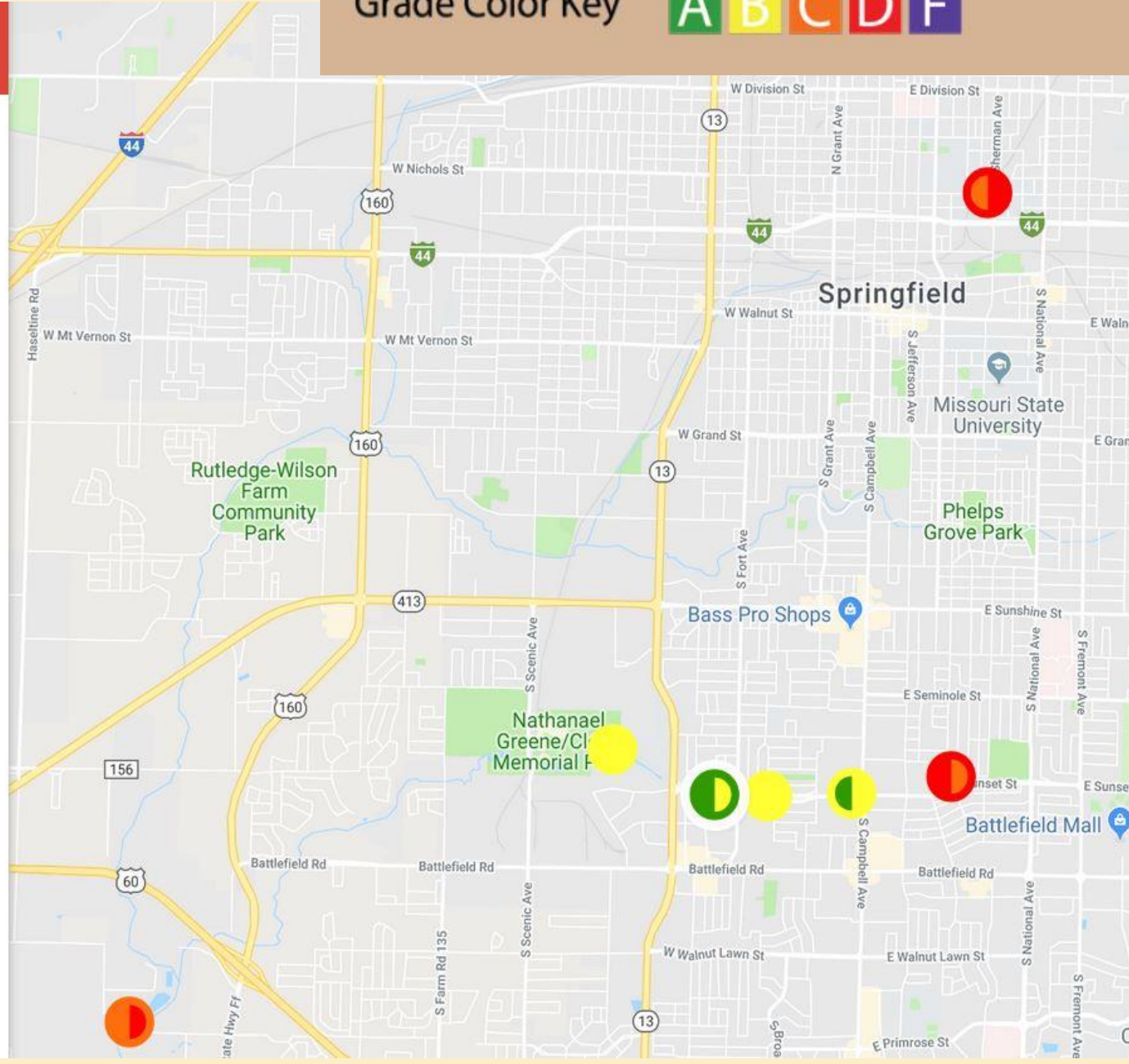
James River

Latitude

37.16654

Longitude

-93.31177



JAMES RIVER

James River Watershed

This region includes the James River Arm of Table Rock Lake and had the only site with an overall “A” grade outside of the Beaver Lake watershed. This site received an “A” due to improvements in water quality. Nitrogen concentrations have been historically high throughout the watershed, but decreased slightly in 2018.

LAKE TANEYCOMO

- ✘ Powersite dam completed in 1913
- ✘ Formed Lake Taneycomo (Taney County, MO)
- ✘ Engineers: 100 year lifespan
- ✘ Warm water fishery and tourist destination
- ✘ Table Rock dam 1959
- ✘ Cold water fishery
- ✘ Sediment / aquatic vegetation a problem

POWERSITE DAM



TANEYCOMO WATERSHED MANAGEMENT PLAN

- ✘ Planned start date November 1, 2019
- ✘ EPA 9 element plan
- ✘ Establish Advisory Committee
- ✘ Establish Stakeholder Group
- ✘ Study Bank Erosion – Lake & Tributarys
- ✘ STEP-L Modeling
- ✘ Demonstration Projects: Porous Pavement & Streambank Restoration

TABLE ROCK DAM & LAKE TANEYCOMO



POTENTIAL PROJECT - LAKE TANEYCOMO

- ✘ Multi-year & Multi-million Dollar Projects
- ✘ Focus on Lake Taneycomo
- ✘ Sediment & Plant Removal
- ✘ Gravel Removal
- ✘ Improve Fish Habitat
- ✘ Improve Water Quality
- ✘ Potential Partners: FOR, MDC, OWW, Bass Pro, Corps, MDNR, Branson, Taney County, Liberty Utilities, Rockaway Beach, etc.



LAKE TANEYCOMO



LAKE TANEYCOMO



LAKE TANEYCOMO



LAKE TANEYCOMO

LAKE TANEYCOMO



LAKE TANEYCOMO



STREAMBANK EROSION









OZARKS WATER WATCH

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