

**Water Monitoring Solutions®**



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# 2020 Cypress Creek Basin Highlights Report

by Randy Rushin

Water Monitoring Solutions, Inc.

## 2020 CYPRESS CREEK BASIN HIGHLIGHTS REPORT



# 2020 Integrated Report

## §303(d) Delistings

Segment Description	Parameter
Big Cypress Creek below Lake Bob Sandlin (Segment 0404)	Sulfate
James Bayou (Segment 0407_02)	<i>E. coli</i>
Little Cypress Creek (Segment 0409_03)	<i>E. coli</i>
Black Cypress Bayou (Segment 0410_03)	DO, Copper
Black Cypress Bayou (Segment 0410_04)	<i>E. coli</i>
Black Cypress Bayou (Segment 0410A_01)	DO

# 2020 Integrated Report

## §303(d) New Impairments

Segment	Description	Parameter
0402B	Hughes Creek	DO
0404E	Dry Creek	<i>E. coli</i>
0404J	Prairie Creek	DO
0410	Black Cypress Creek	Lead in water

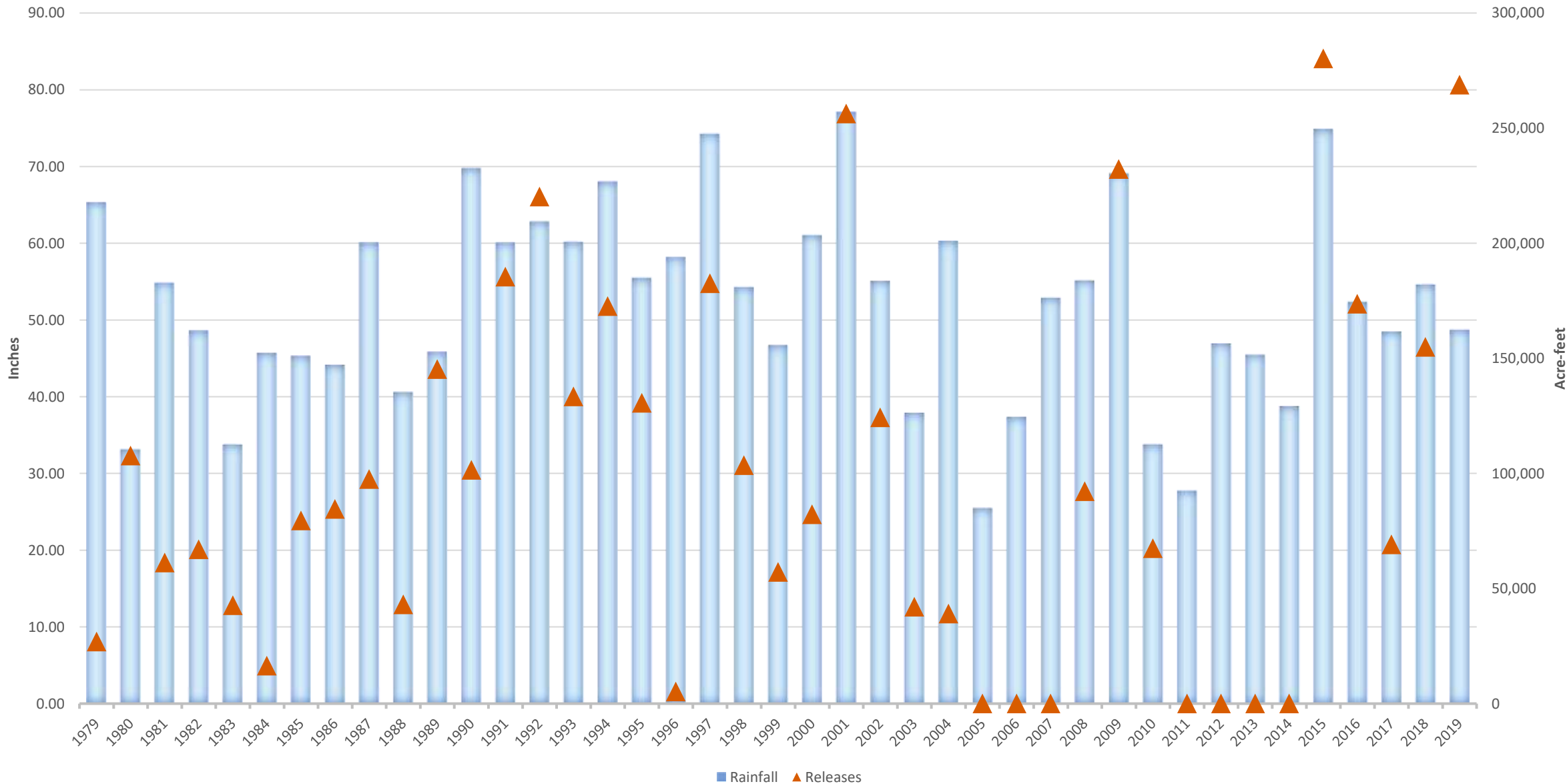
# 2020 Integrated Report §303(d) List

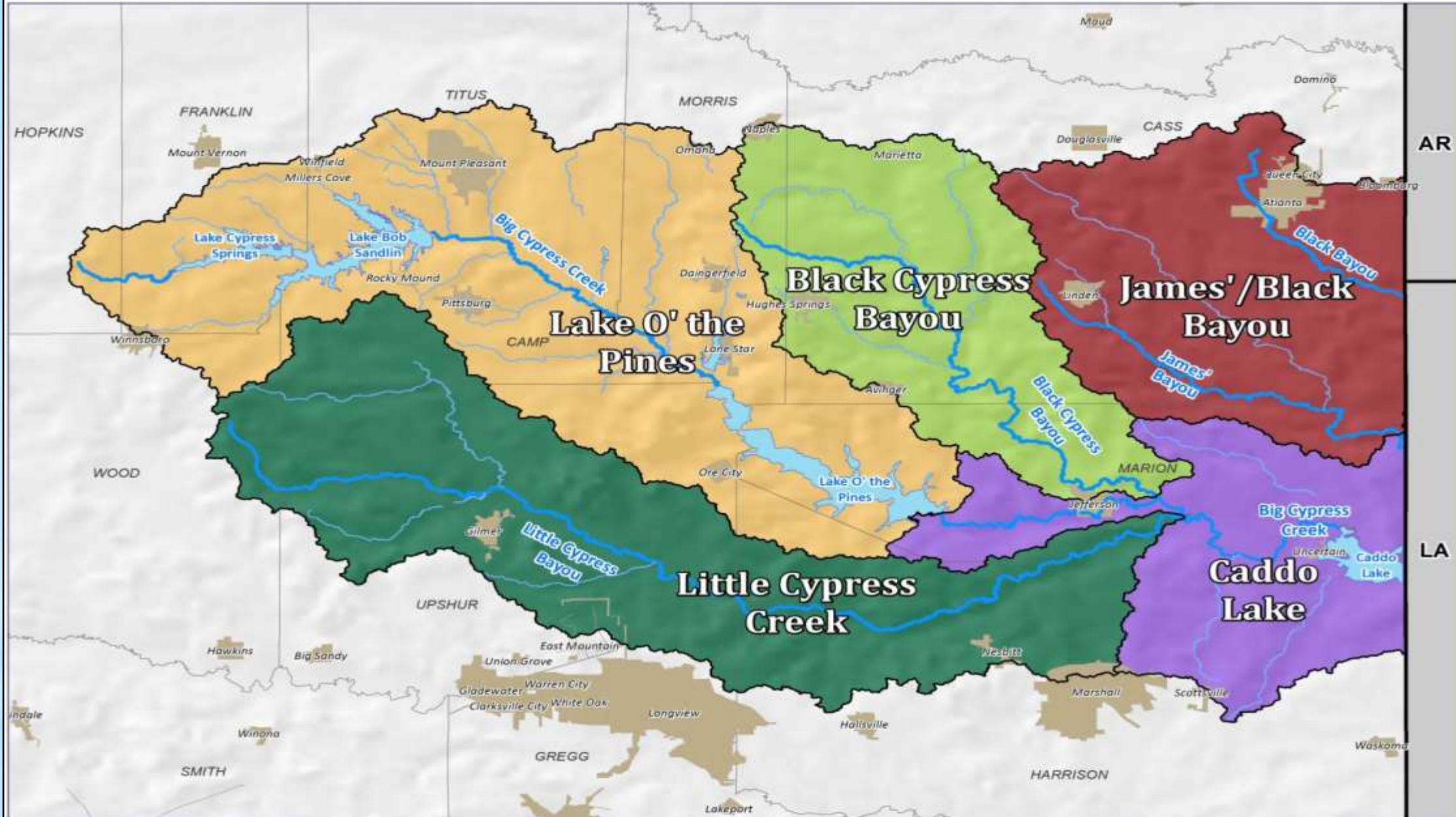
Segment ID	Description	Parameter
0401	Caddo Lake (entire)	DO, Mercury in fish tissue
0401A	Harrison Bayou	DO
0402	Big Cypress Creek below LOP	DO, Mercury in fish tissue
0402B	Hughes Creek	DO
0403	Lake O' the Pines	High pH, DO
0404	Big Cypress Creek below LBS	<i>E. coli</i>
0404A	Ellison Creek Reservoir	Sediment Toxicity (LOE); Dioxin in fish tissue; PCBs in fish tissue
0404B	Tankersley Creek	<i>E. coli</i>
0404C	Hart Creek	<i>E. coli</i>
0404E	Dry Creek	<i>E. coli</i>
0404J	Prairie Creek	DO
0404N	Lake Daingerfield	Mercury in fish tissue
0405	Lake Cypress Springs	High pH; Nutrient Reservoir Criteria
0405A	Big Cypress Creek	DO, <i>E. coli</i>
0406	Black Bayou	DO, <i>E. coli</i>
0407	James' Bayou	DO, <i>E. coli</i>
0409	Little Cypress Bayou	DO, <i>E. coli</i>
0409A	Lilly Creek	<i>E. coli</i>
0409B	South Lilly Creek	<i>E. coli</i>
0410	Black Cypress Bayou	DO, Copper & Lead in water, Mercury in fish tissue
0410A	Black Cypress Creek	<i>E. coli</i>



# LAKE BOB SANDLIN

## Annual Rainfall and Releases





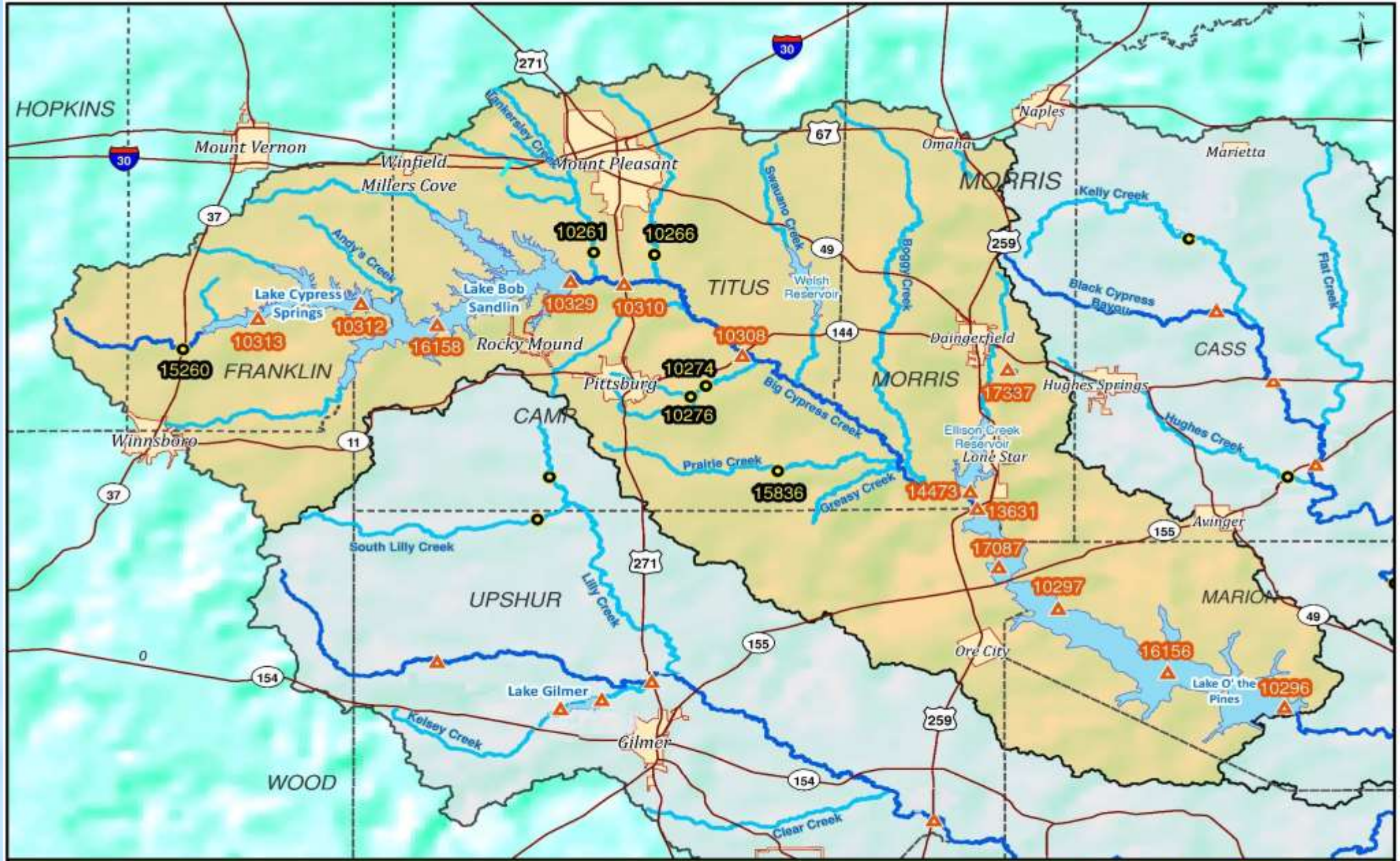
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LA



# Cypress Creek Basin Subwatersheds





# Lake O' the Pines Watershed Monitoring Stations

- ▲ TCEQ Stations
- CRP Stations
- Watershed Boundary
- Unclassified
- Classified

0 2.25 4.5 9 13.5  
Miles



# Segment 0405 Lake Cypress Springs



## Impairments:

- High pH
- Excessive Algal Growth

## Segment 0405A Big Cypress Creek

### Impairments:

- DO Grab Minimum
- *E. coli*

### Concerns:

- Ammonia
- Chlorophyll *a*

# Segment 0408 Lake Bob Sandlin



Impairments:  
None

Concerns:  
None

*One of the least polluted  
reservoirs in Texas*



HOPKINS

Mount Vernon

Winfield

Mount Pleasant

Millers Cove

Andy's Creek

Lake Cypress Springs

Lake Bob Sandlin

Rocky Mound

TITUS

Welsh Reservoir

FRANKLIN

CAMP

Pittsburg

MORRISTOWN

Winnsboro

Prairie Creek

Greasy Creek

271

30

67

30

37

49

144

37

11

144

10313

10312

16158

10329

10310

10308

15260

10261

10266

10274

10276

15836

144

# Segment 0404B Tankersley Creek



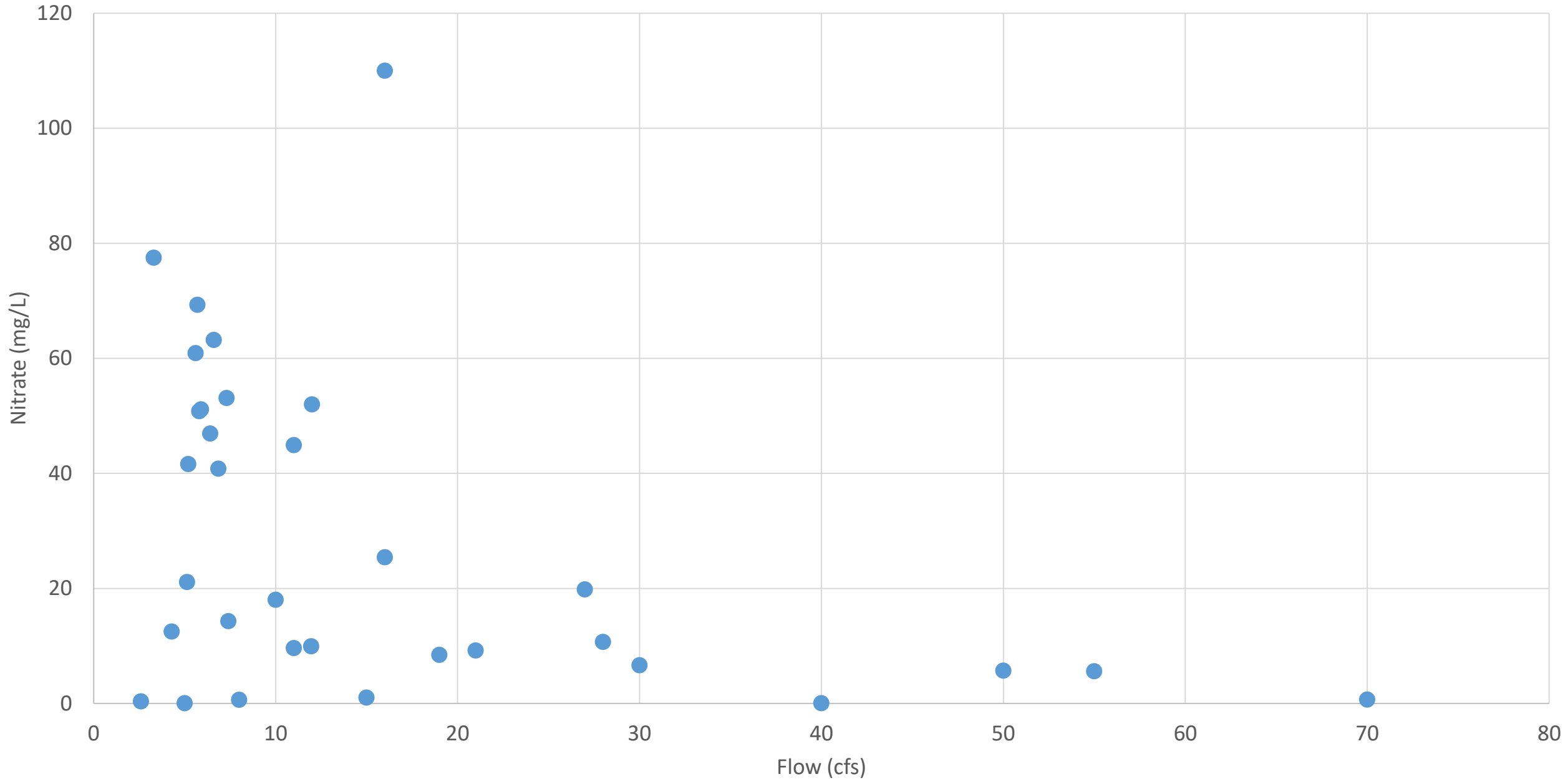
## Impairments:

- *E. coli*

## Concerns:

- Habitat
- Nitrate
- Total Phosphorus

# Station 10261 - Nitrate versus Flow



# Segment 0404 Big Cypress Creek below LBS



Impairments:

- *E. coli*

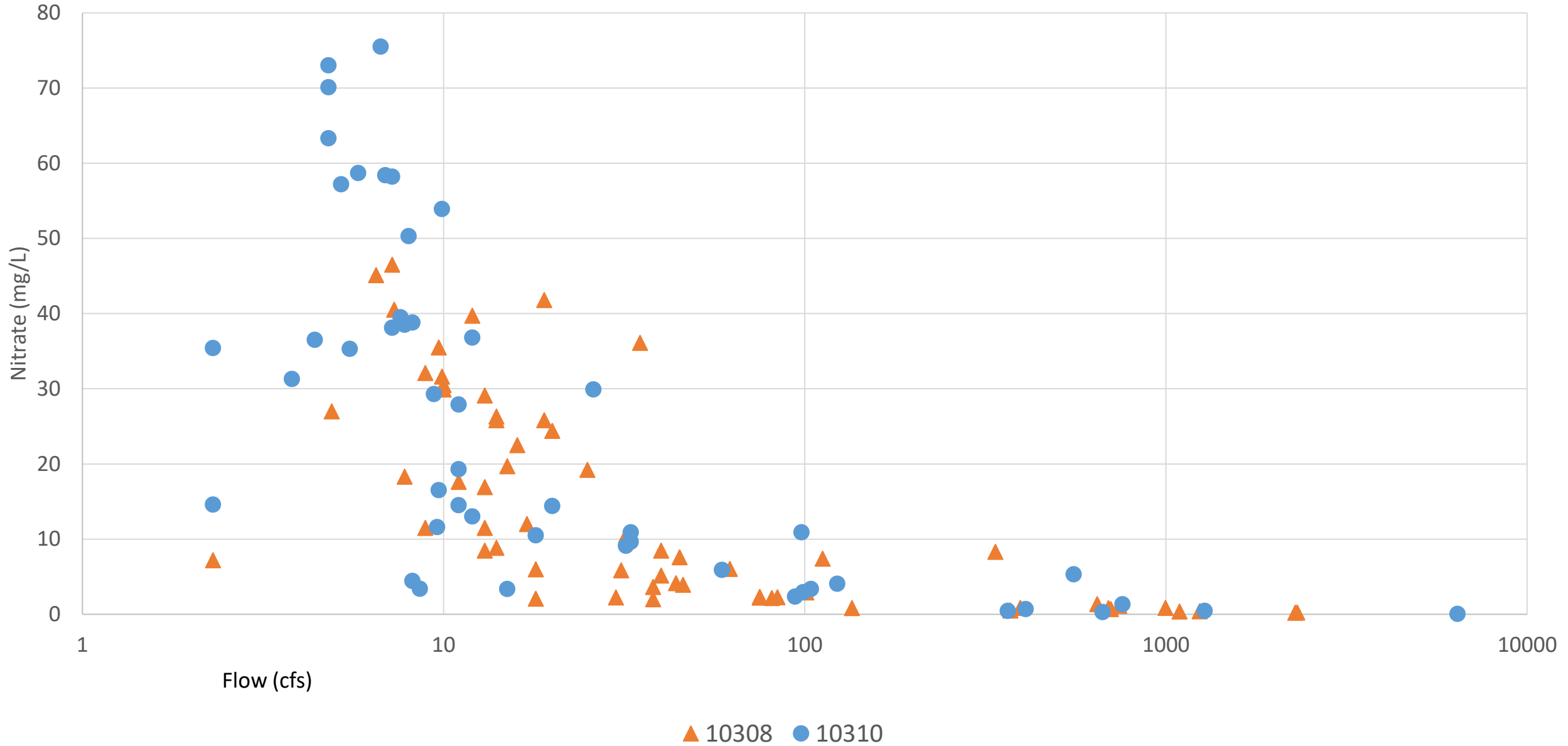
Concerns:

- Nitrate
- Total Phosphorus
- Chlorophyll *a*

*Delisted Sulfate*

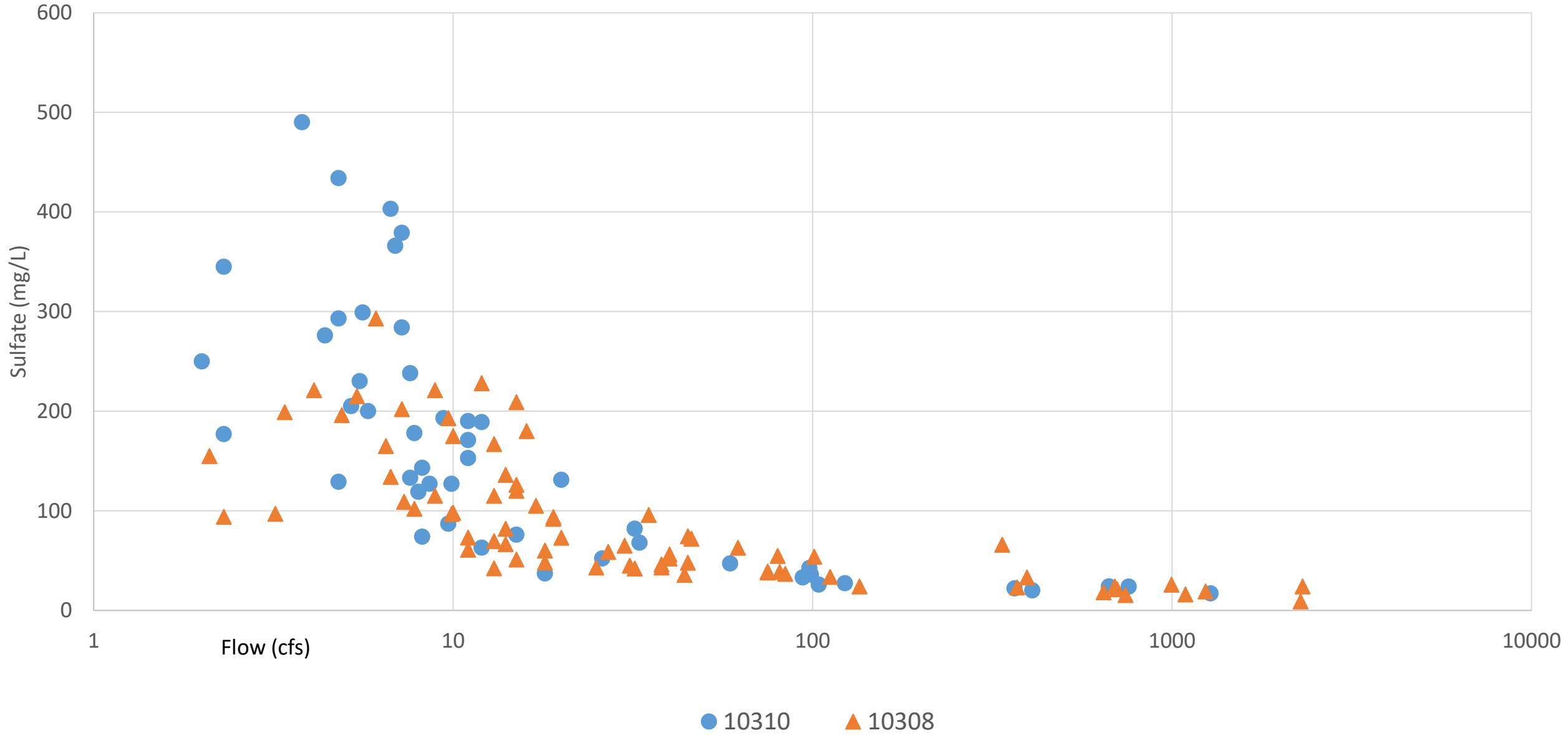
# AU 0404\_02

## Nitrate versus Flow



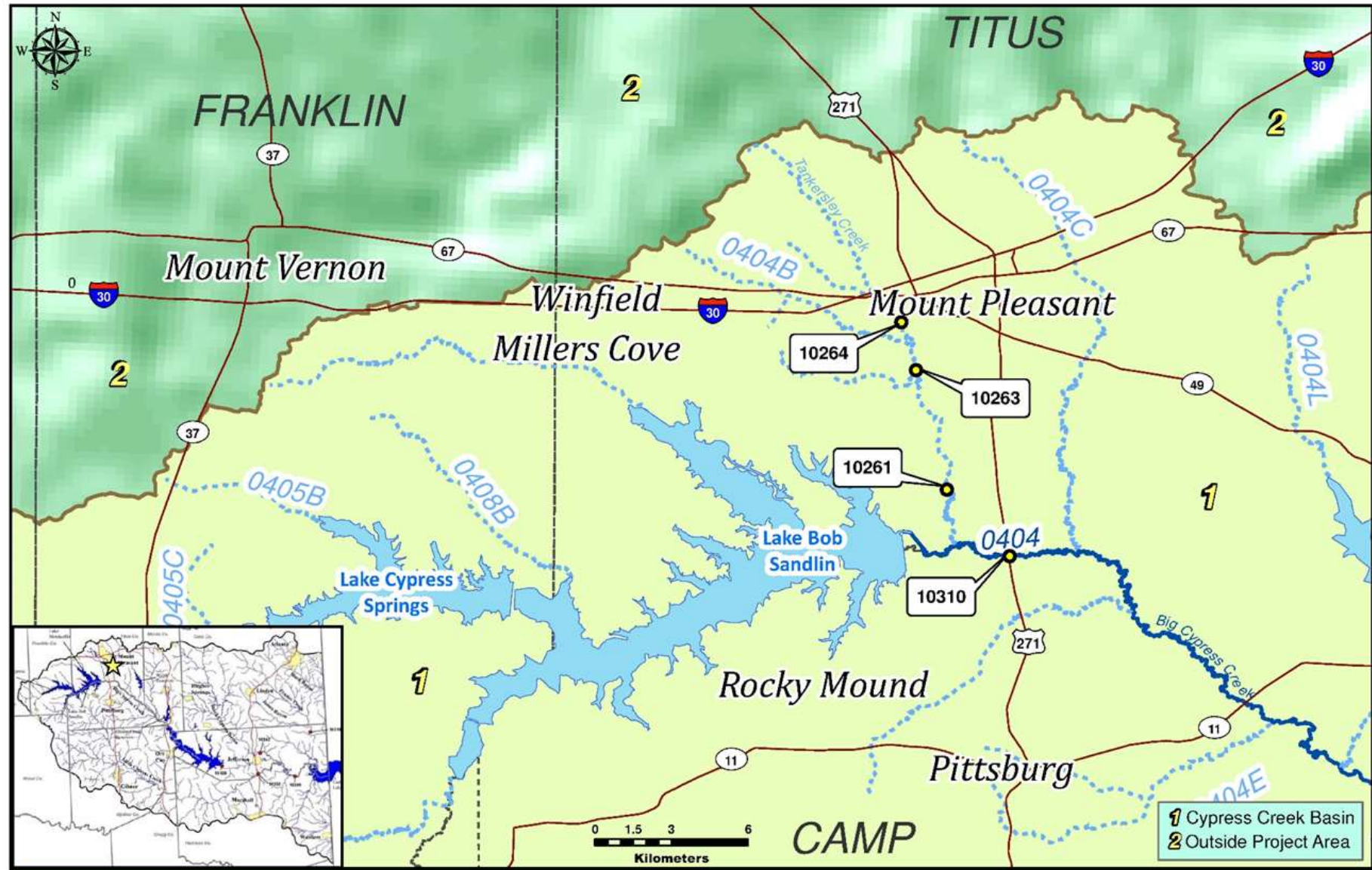
# AU 0404\_02

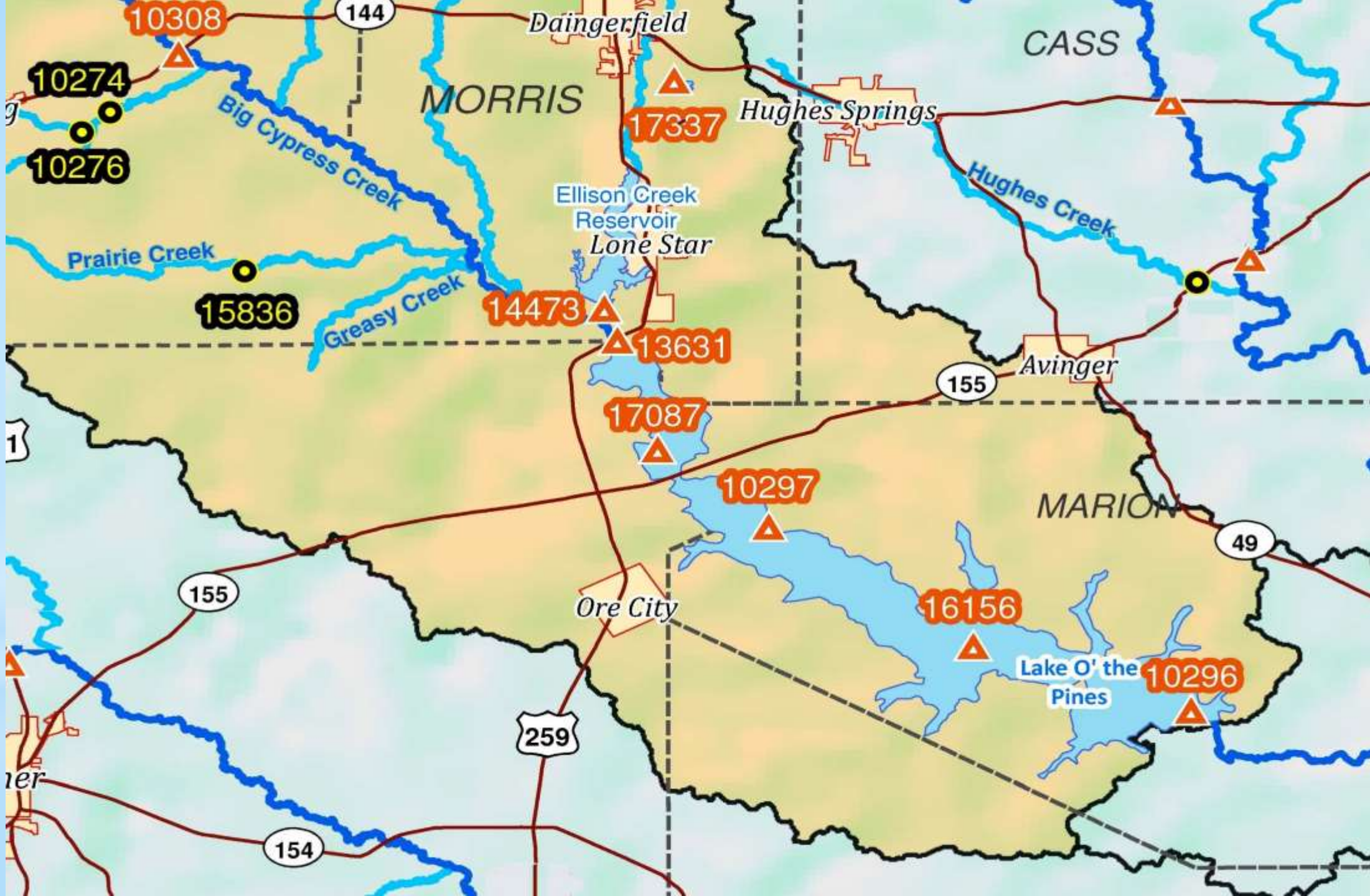
## Sulfate versus Flow





# Sulfate Special Study





# Segment 0403 Lake O' the Pines



## Impairments:

- High pH (AU\_01, 02, 03)
- 24 HR DO Minimum (AU\_04)

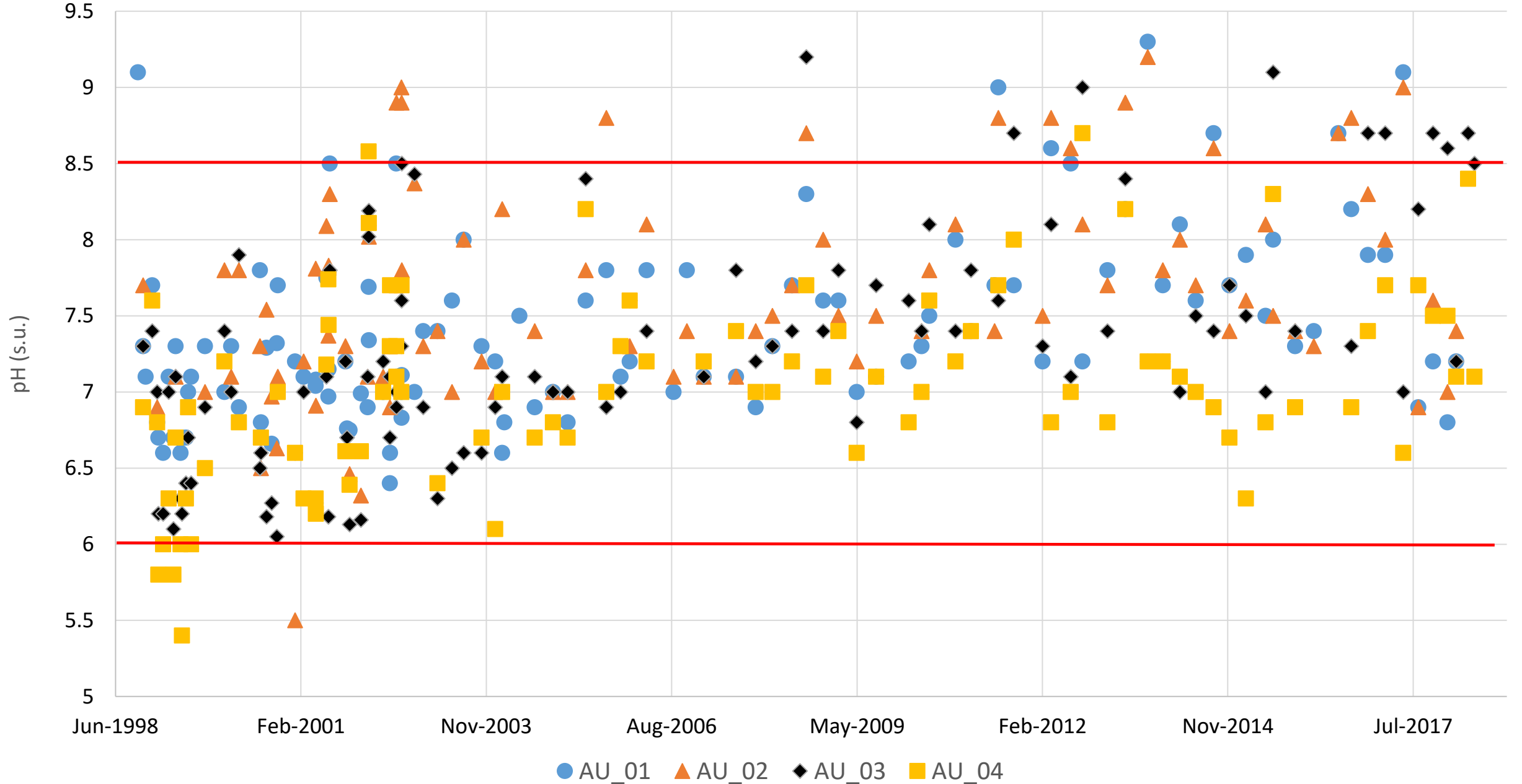
## Concerns:

DO Grab Minimum (AU\_04)

*TCEQ - Eutrophic*

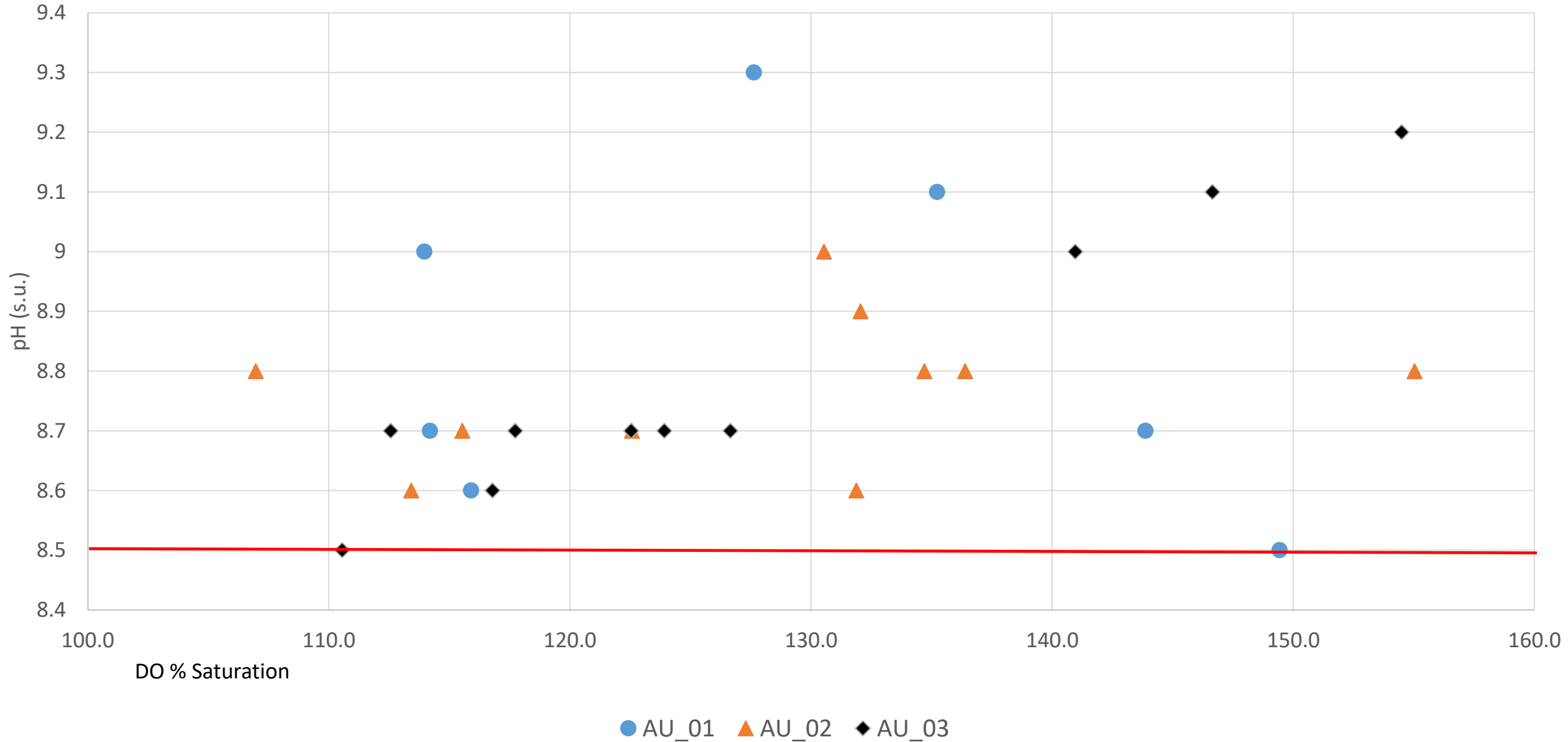
*Ranked in top 30% for Chl. a*

# Lake O' the Pines pH by AU



# Lake O' the Pines

## High pH versus DO % Saturation

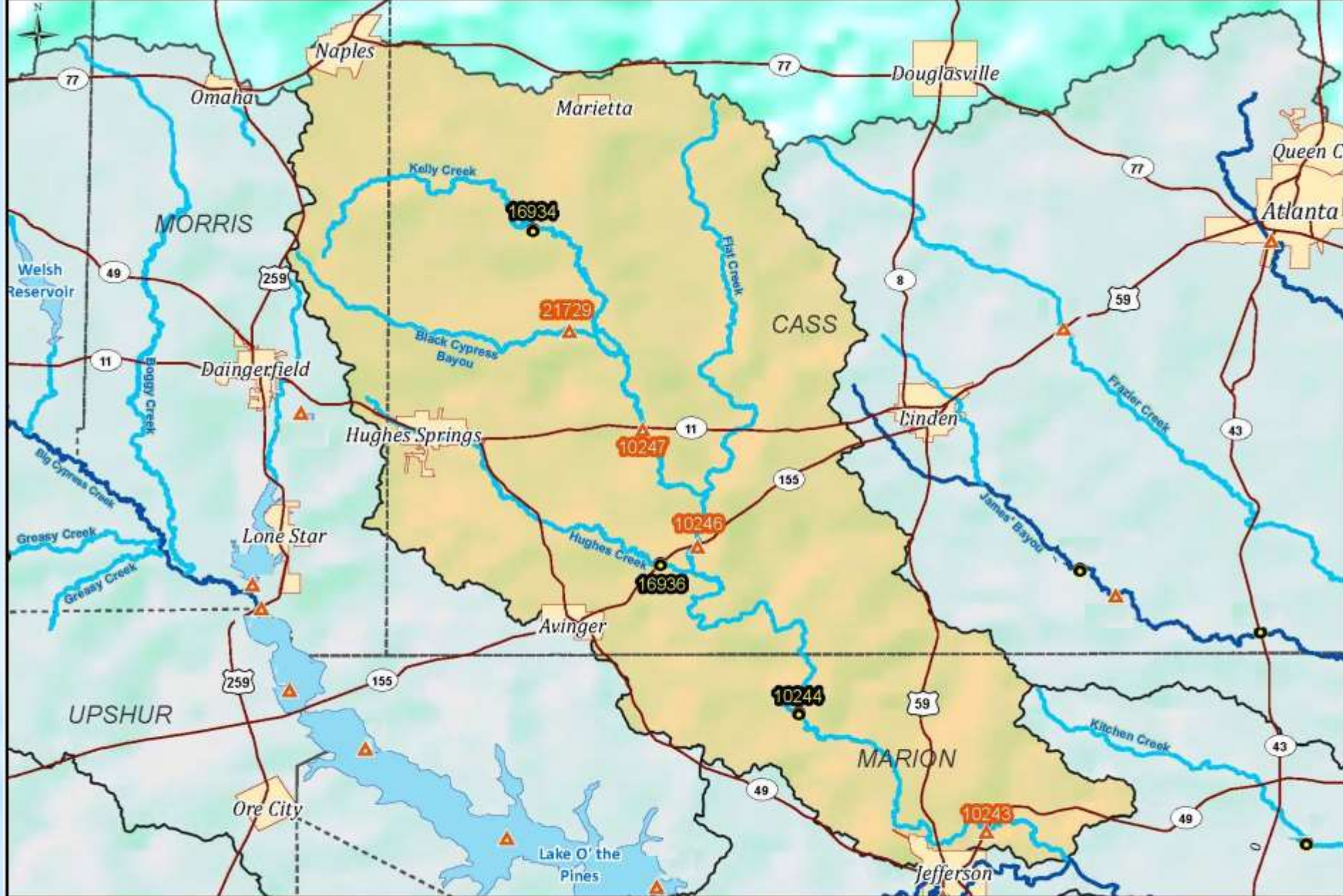


# Diel Special Study



# Continuous Monitoring Special Study





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## Black Cypress Watershed Monitoring Stations

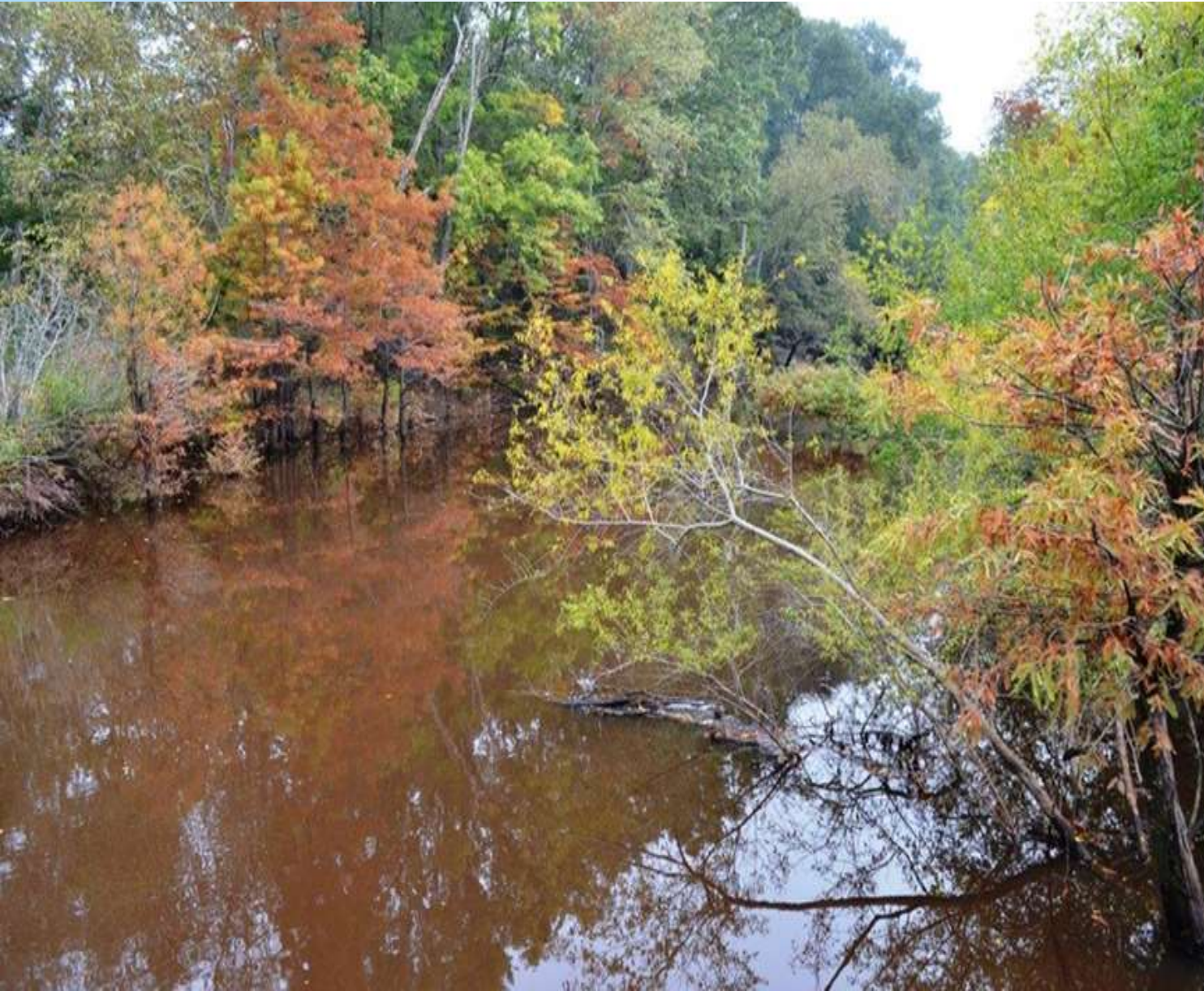
- ▲ TCEQ Stations
- CRP Stations
- Watershed Boundary
- Unclassified
- Classified

0 1.75 3.5 7 10.5

Miles



# Segment 0410 Black Cypress Creek/Bayou



## Impairments:

- Lead\* & Copper in water
- Mercury in tissue
- 24 HR DO Avg.
- DO Grab Min.
- *E. coli*

*\*new impairment*

## Concerns:

- Copper
- *E. coli*

*Delisted DO & Copper (AU\_03)*

*E. coli (AU\_04)*

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# Little Cypress Creek Watershed Monitoring Stations

- ▲ TCEQ Stations
- CRP Stations
- Watershed Boundary
- Unclassified
- Classified

0 2.25 4.5 9 13.5  
Miles

# Segment 0409 Little Cypress Creek/Bayou



## Impairments:

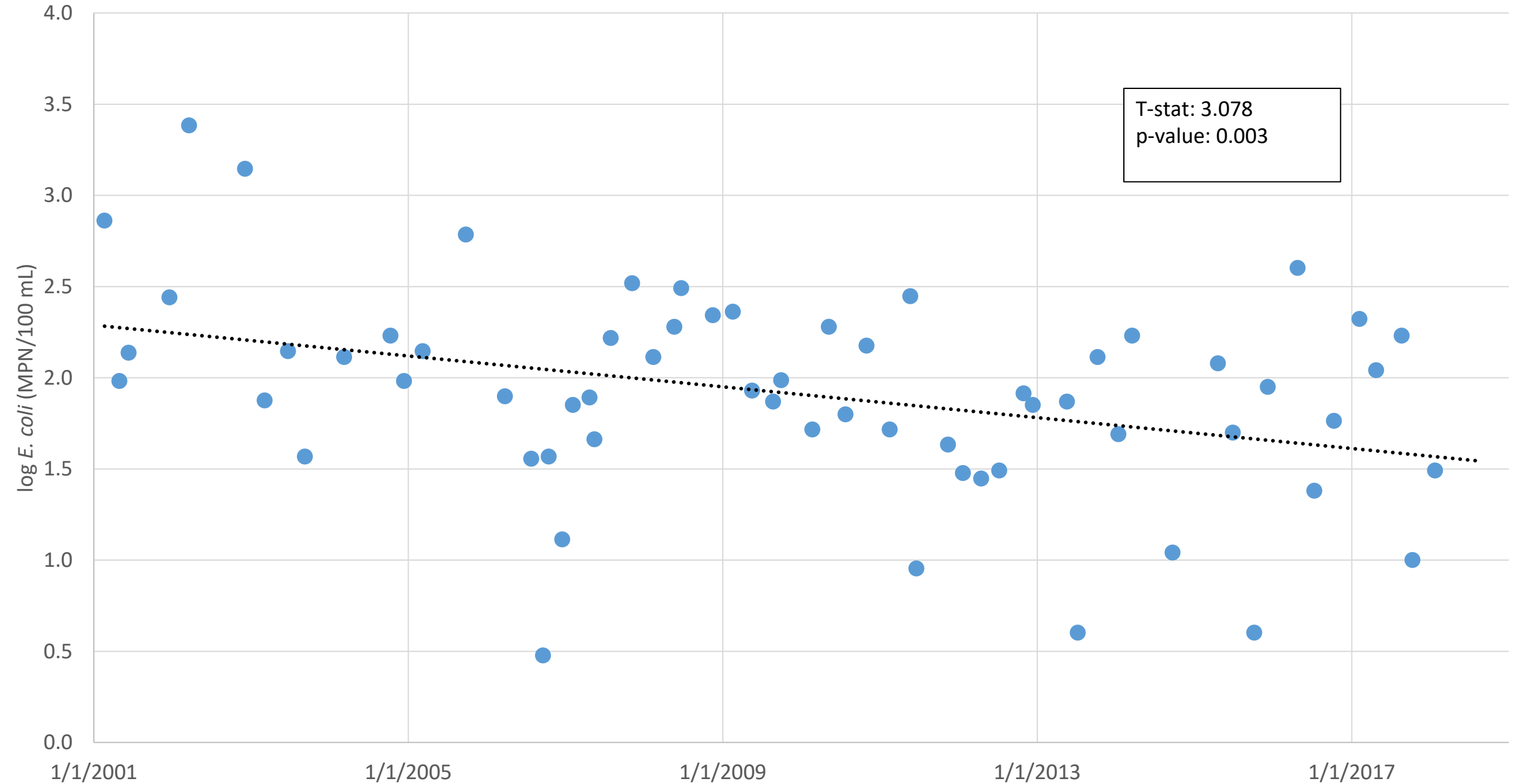
- 24 HR DO Avg. & Min.
- *E. coli*

## Concerns:

- 24 HR DO Min.

*Delisted E.coli (AU\_01)*

# AU 0409\_01 Station 10332 *E. coli*





# Caddo Lake Watershed Monitoring Stations

▲ TCEQ Stations      — Unclassified  
 ● CRP Stations      — Classified  
 [Orange Outline] Watershed Boundary

0 1.5 3 6 9

# Segment 0402 Big Cypress Creek below LOP



## Impairments:

- 24 HR DO Avg.
- Mercury in tissue

## Concerns:

- Benthic Community
- Chlorophyll *a*

# Segment 0401 Caddo Lake



## Impairments:

- 24 HR DO Avg. & Min.
- DO Grab
- Mercury in tissue

## Concerns:

- DO Grab
- Iron in sediment



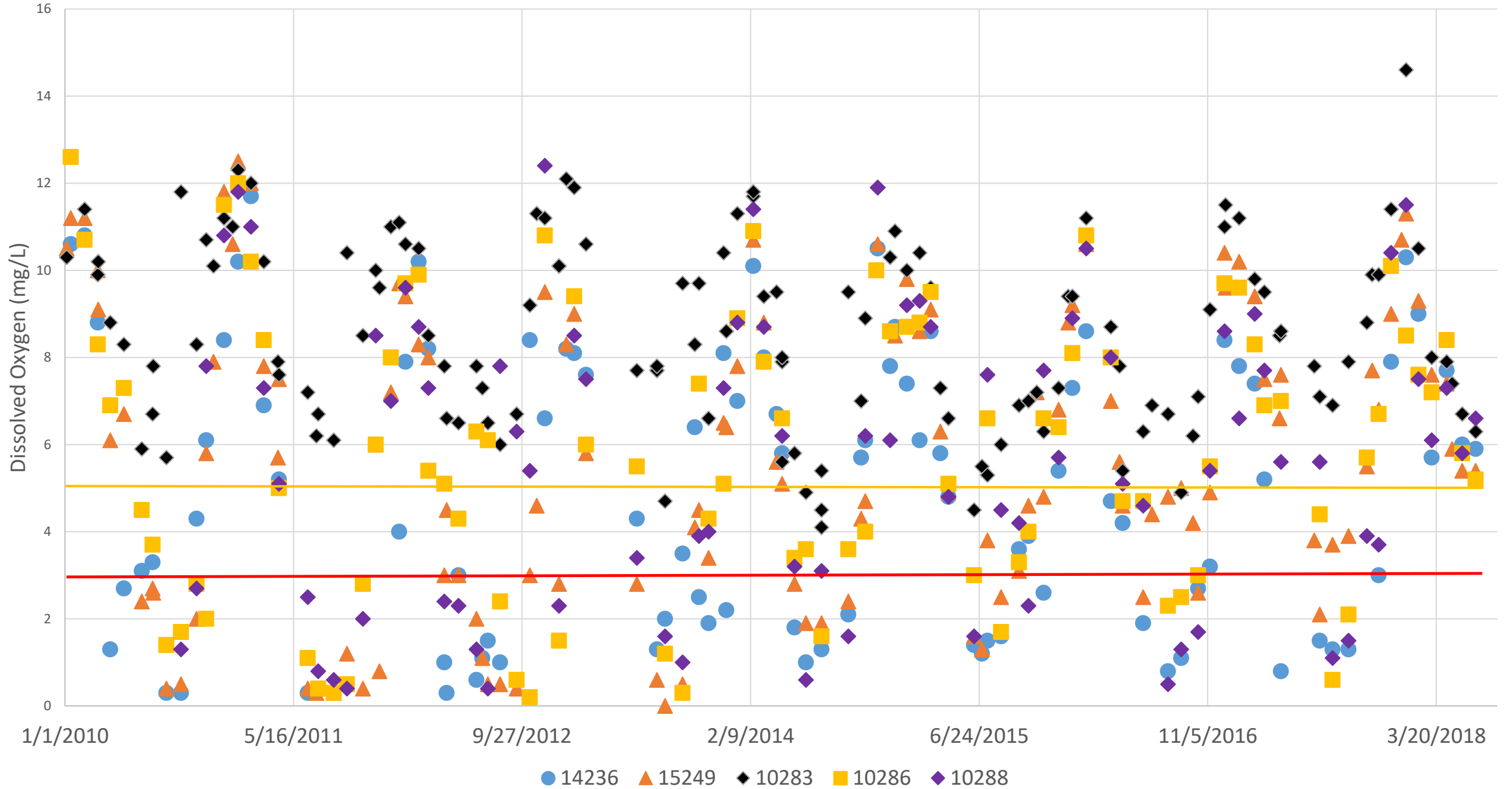
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# Caddo Lake Dissolved Oxygen Grab Samples



# Caddo Lake DO Grab January 2010 - June 2018

Description	Station	n	< 3 mg/L	%	< 5 mg/L	%
Clinton Lake	14236	94	33	35.1%	47	50.0%
Uncertain	15249	123	33	26.8%	56	45.5%
Harrison Bayou Arm	10286	91	21	23.1%	36	39.6%
Goose Prairie Arm	10288	83	23	27.7%	34	41.0%
Mid-lake	10283	130	0	0.0%	6	4.6%



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## James' / Black Bayou Watersheds Monitoring Stations

- ▲ TCEQ Stations
- CRP Stations
- Watershed Boundary
- Unclassified
- Classified

0 1.5 3 6 9

Miles

# Segment 0406 Black Bayou



## Impairments:

- DO Grab
- *E. coli*

## Concerns:

- DO Grab
- Fish Community
- Benthic Community
- Habitat

# Segment 0407 James' Bayou



## Impairments:

- 24 HR DO Avg. & Min.
- *E. coli*

## Concerns:

- Benthic Community
- Habitat

*Delisted E.coli (AU\_02)*

# Conclusions

- The most common impairments were DO, *E. coli*, and Mercury in tissue
- Data support most impairments
- Low/No Flow associated with most low DO readings
- Effluent appears to be a significant contributor of Nutrients and Sulfate in Big Cypress Creek
- Increasing pH and chlorophyll may be an indication of eutrophication in Cypress Creek Basin reservoirs

# **Water Monitoring Solutions, Inc.**

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