

CLEAN RIVERS PROGRAM MONITORING

THE MEADOWS CENTER FOR WATER AND THE ENVIRONMENT
AND WIMBERLEY VALLEY WATERSHED ASSOCIATION

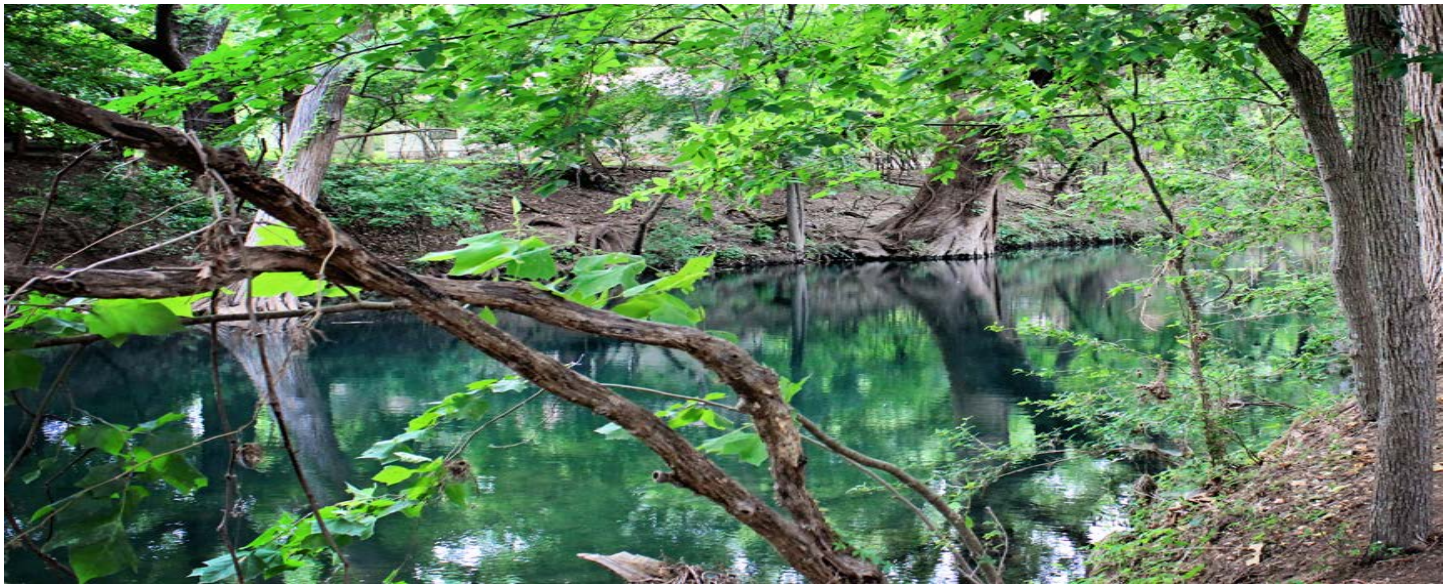
No natural resource is more important to our future than Water. Water is what we do.

RESEARCH | STEWARDSHIP | SERVICE | EDUCATION | SERVICE



THE MEADOWS CENTER
FOR WATER AND THE ENVIRONMENT

TEXAS STATE UNIVERSITY



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GIS and Research Associate
Texas Stream Team Water Quality Coordinator

March 24, 2015



WIMBERLEY VALLEY WATERSHED ASSOCIATION

- Clean Rivers Partner with GBRA
- GBRA monitors one site on Cypress Creek
 - Site 12674 “Cypress Creek at RR 12 Downtown”
- Added 4 additional sites from Jacobs Well to Blanco River confluence
- WVWA supports CRP and additional Blanco monitoring
- Additional monitoring beginning Spring/Summer 2016 (Cypress Creek WPP)

WVWA CRP Blanco River Sites

Blanco River at Fischer Store Rd.

Blanco River at RR12

Blanco River at Pioneer Town

Blanco River at CR174

Cypress Creek Data

Cypress Creek Data 3/17/1998 - 12/16/2015				
Parameter	Number of Samples	Mean+StDev	Min	Max
Flow (CFS)	348	8.9 ± 18.9	0	265
DO (mg/L)	431	6.9 ± 2.0	0.7	12
Total Suspended Solids (mg/L)	412	2.6 ± 4.1	0.5	35
Conductivity µS/cm	442	560 ± 60	369	916
Temperature (°C)	453	20.7 ± 4.0	8.4	32.4
pH	425	7.5 ± 0.4	6.3	9
E. coli (MPN/100 mL)	419	60	1	3800
Ammonia (mg/L)	403	0.09 ± 0.08	0.02	0.92
Nitrates (mg/L)	419	0.29 ± 0.30	0.02	1.73
Total Phosphorus (mg/L)	406	0.05 ± 0.04	0.01	0.6

Blanco River Data

Blanco River Data 1/13/1998 - 12/16/2015				
Parameter	Number of Samples	Mean+ StDev	Min	Max
Flow (CFS)	285	145.66 ± 510	2	4430
DO (mg/L)	339	8.78 ± 1.66	3.5	13.7
Total Suspended Solids (mg/L)	305	4.14 ± 6.83	0.5	49.7
Conductivity µS/cm	357	478 ± 61	341	838
Temperature (°C)	359	21.7 ± 6.1	9.1	36.5
pH	342	8.0 ± 0.3	6.8	9.3
E. coli (MPN/100 mL)	301	62	2	4800
Ammonia (mg/L)	294	0.08 ± 0.06	0.02	0.3
Nitrates (mg/L)	304	0.27 ± 0.22	0.02	1.07
Total Phosphorus (mg/L)	299	0.04 ± 0.02	0.01	0.2

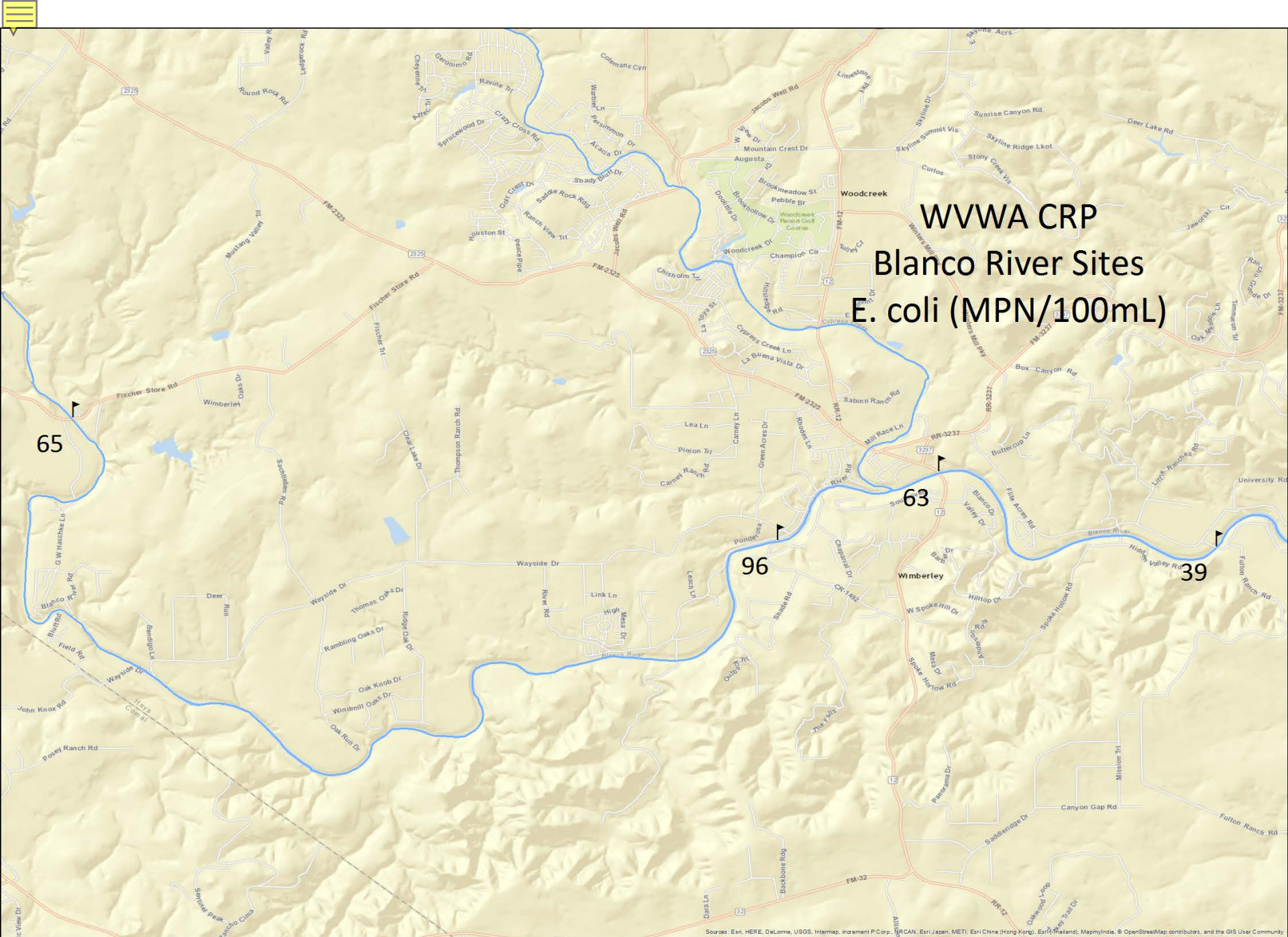
WVWA CRP Blanco River Sites

Blanco River at Fischer Store Rd.

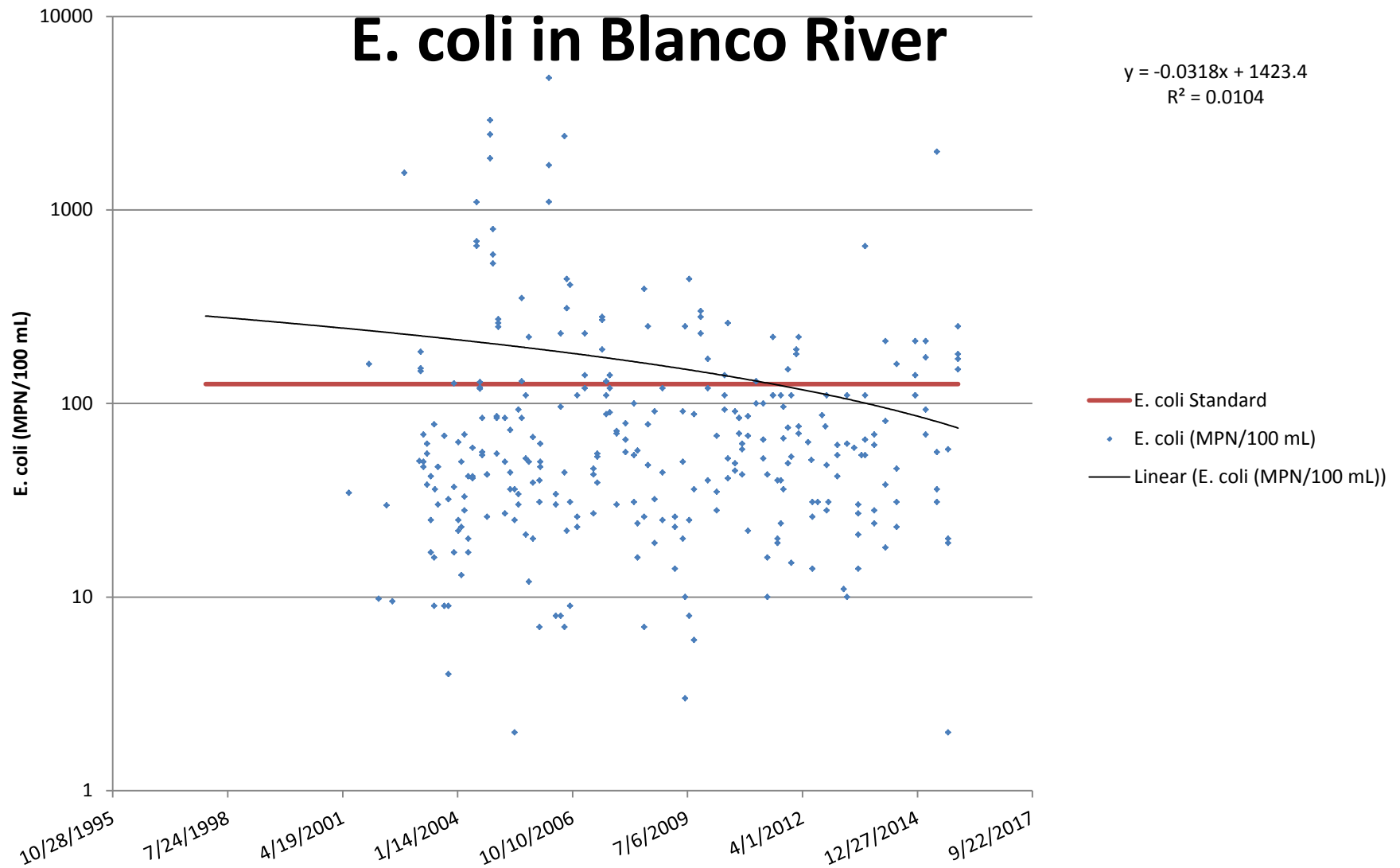
Blanco River at RR12

Blanco River at Pioneer Town

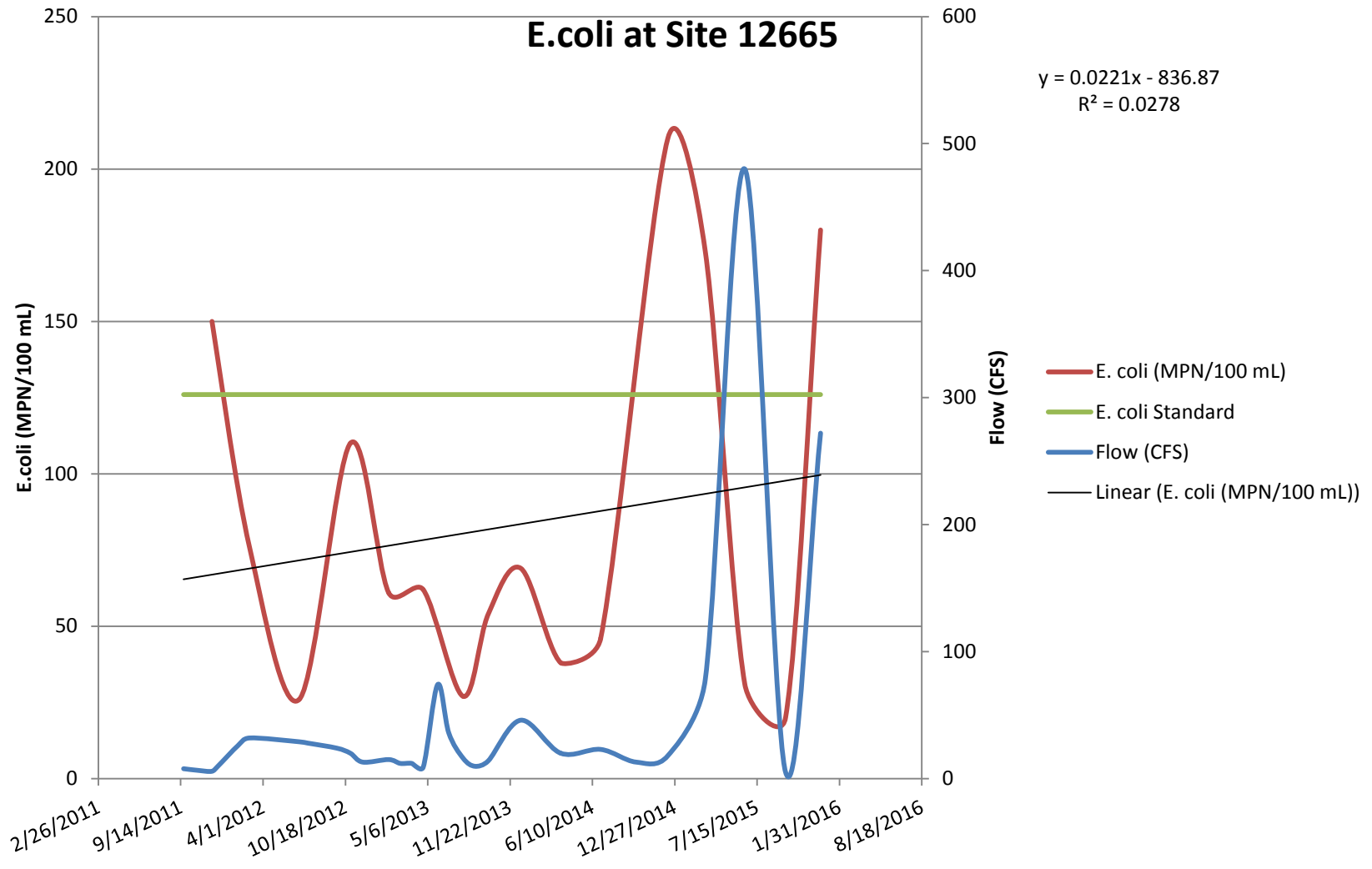
Blanco River at CR174

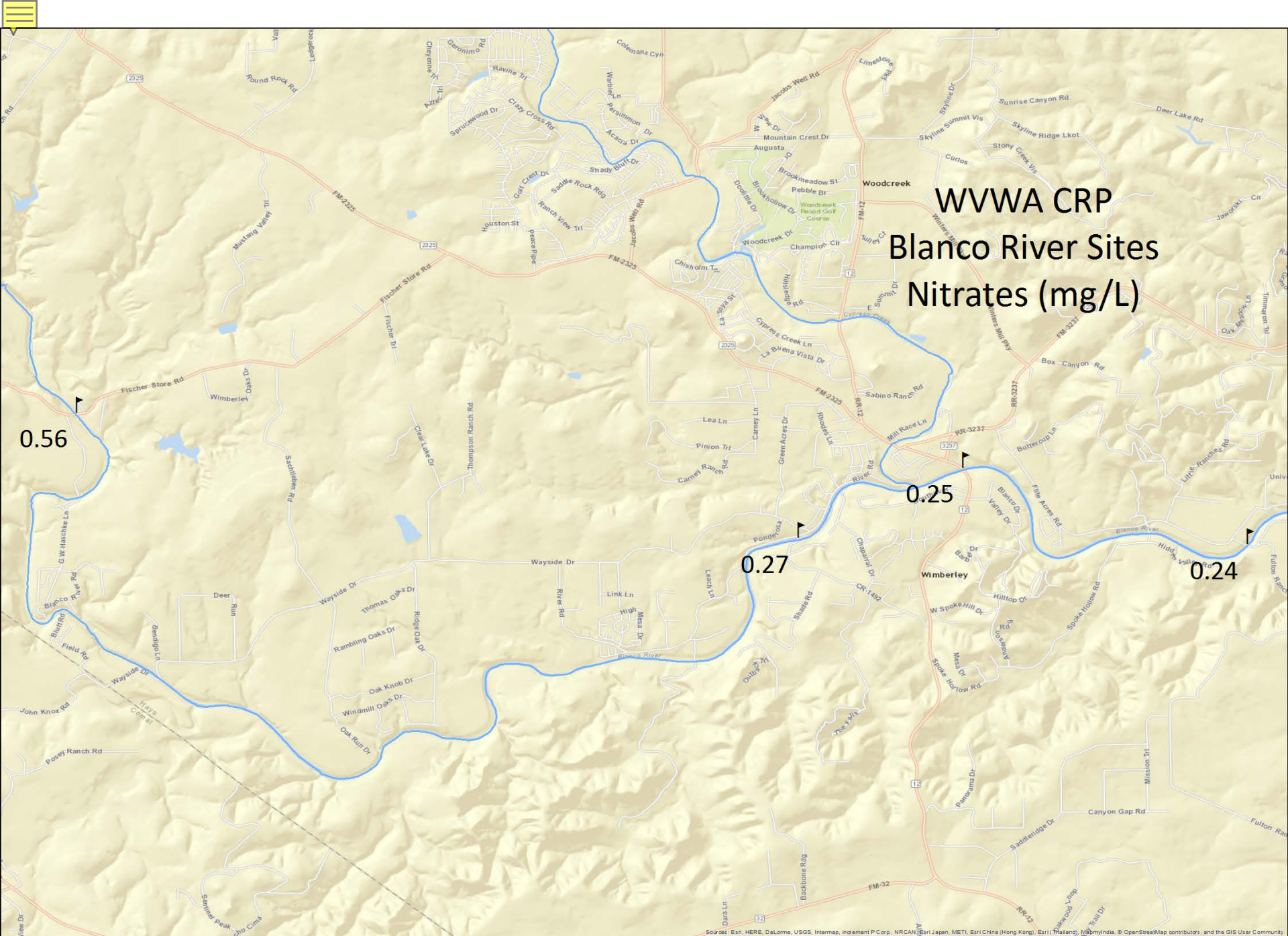


WVWA CRP
Blanco River Sites
E. coli (MPN/100mL)

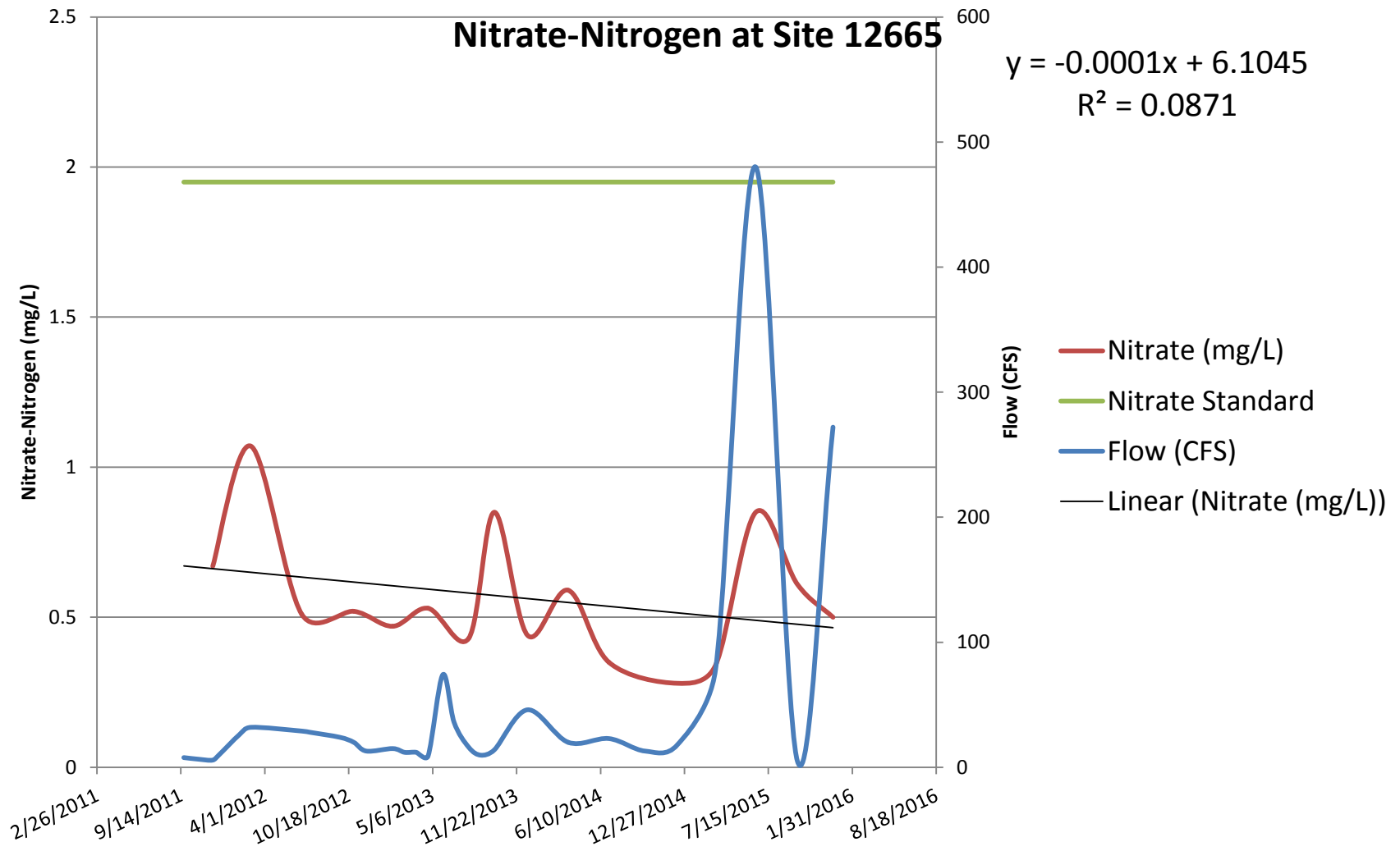


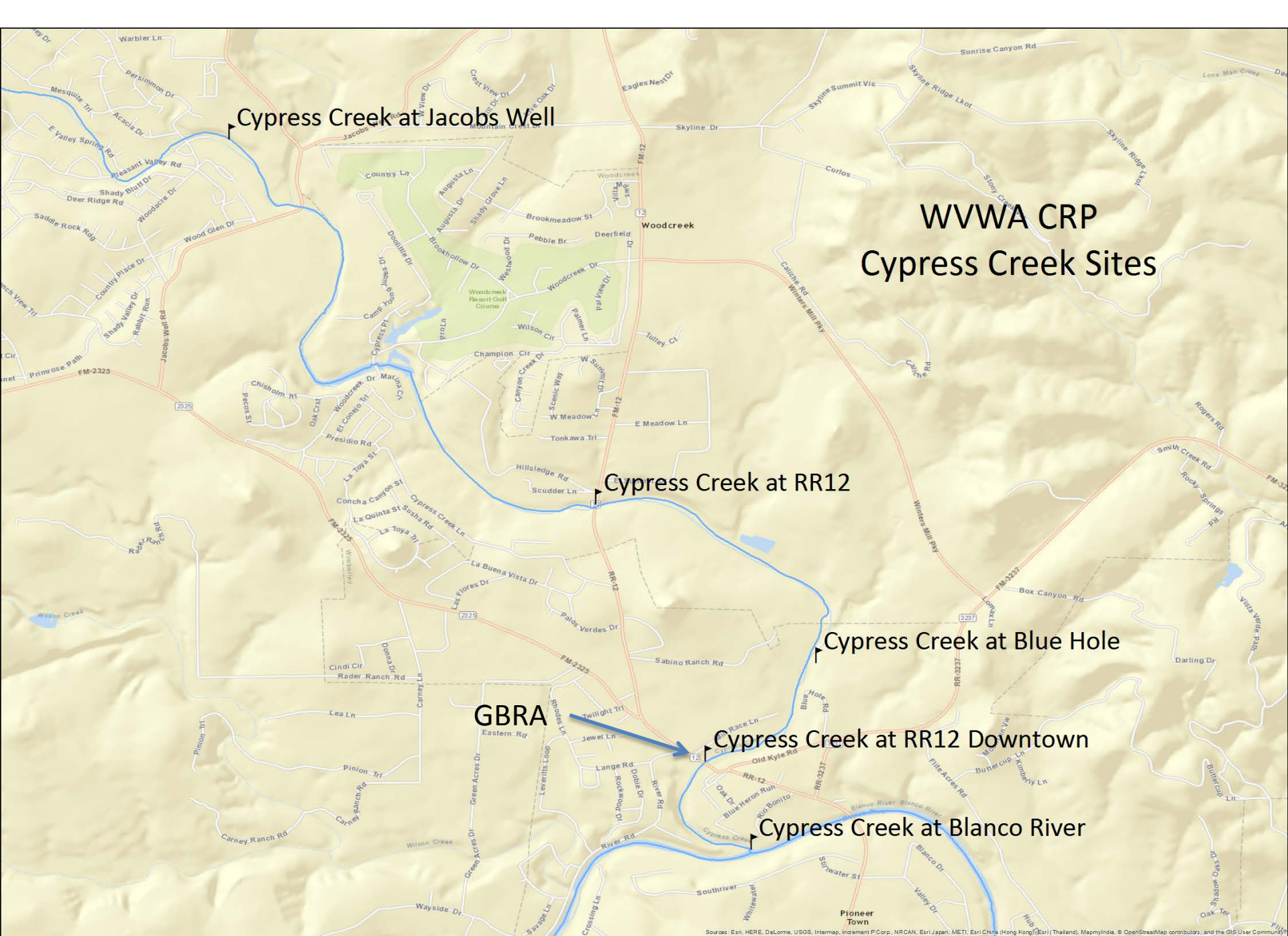
E. Coli at Blanco River at Fischer Store Road



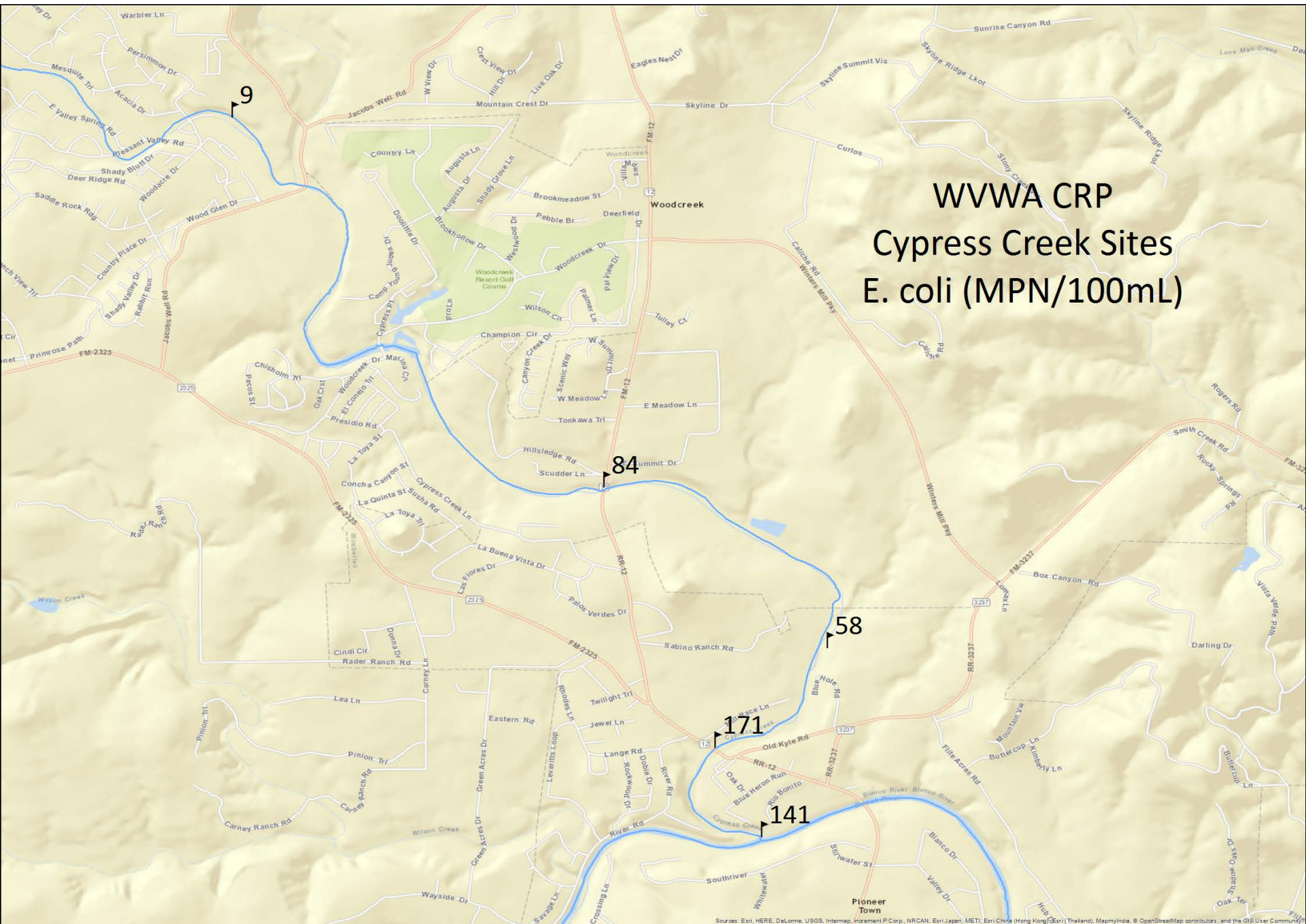


Nutrients at Blanco & Fischer Store Rd

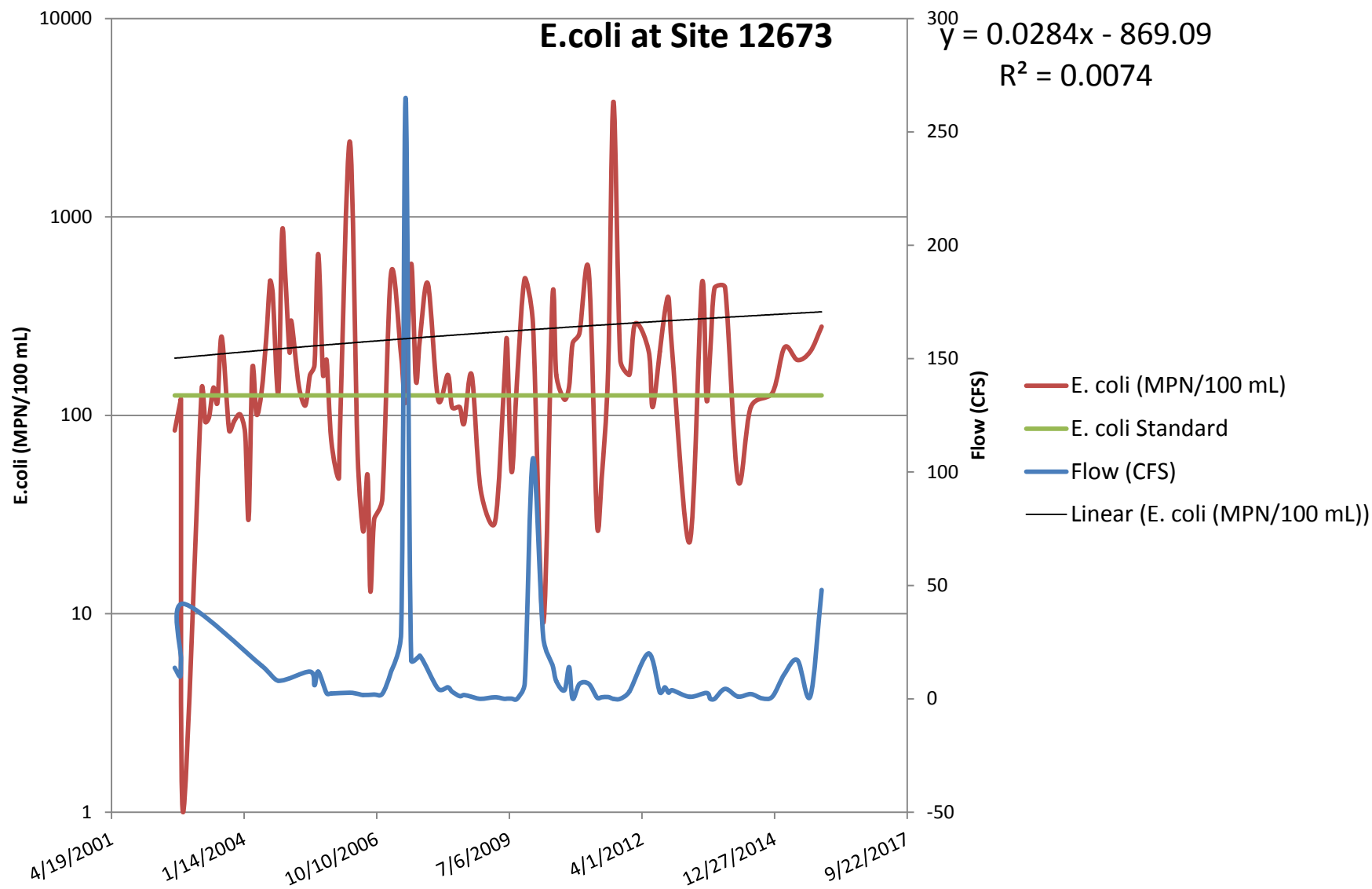




WVWA CRP Cypress Creek Sites E. coli (MPN/100mL)

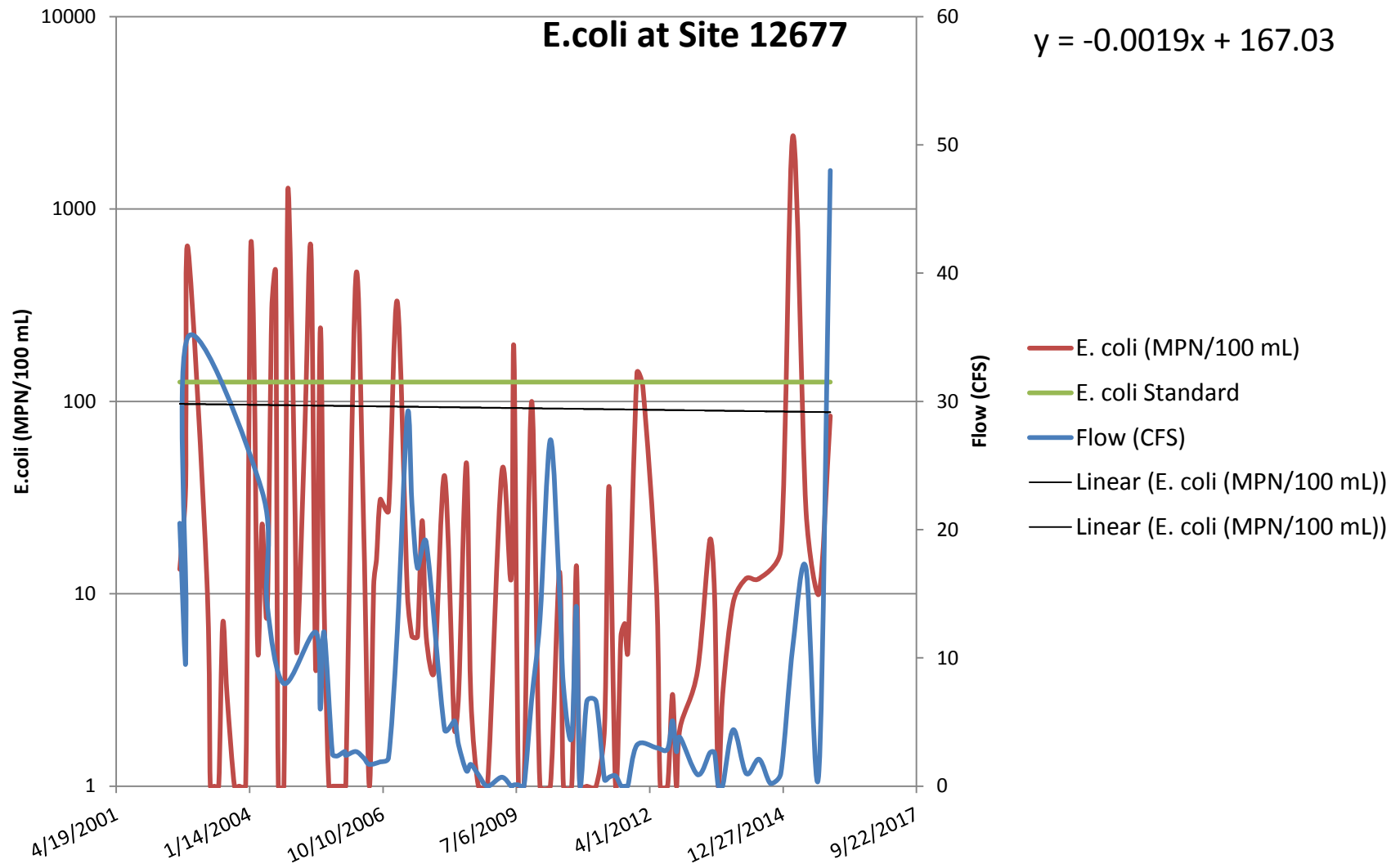


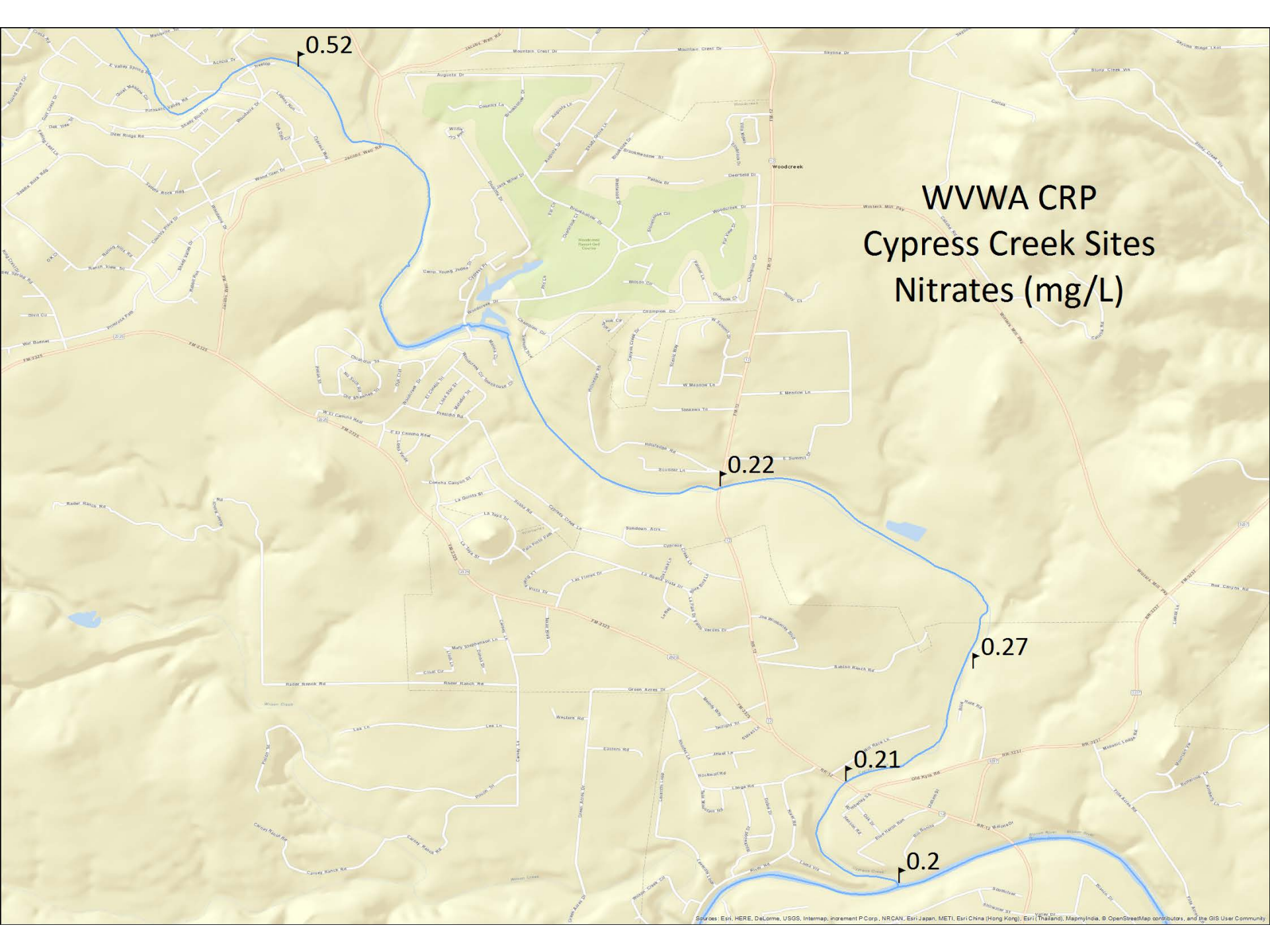
E. coli at Blanco River Confluence





E. coli at Jacob's Well





WWWA CRP Cypress Creek Sites Nitrates (mg/L)

0.52

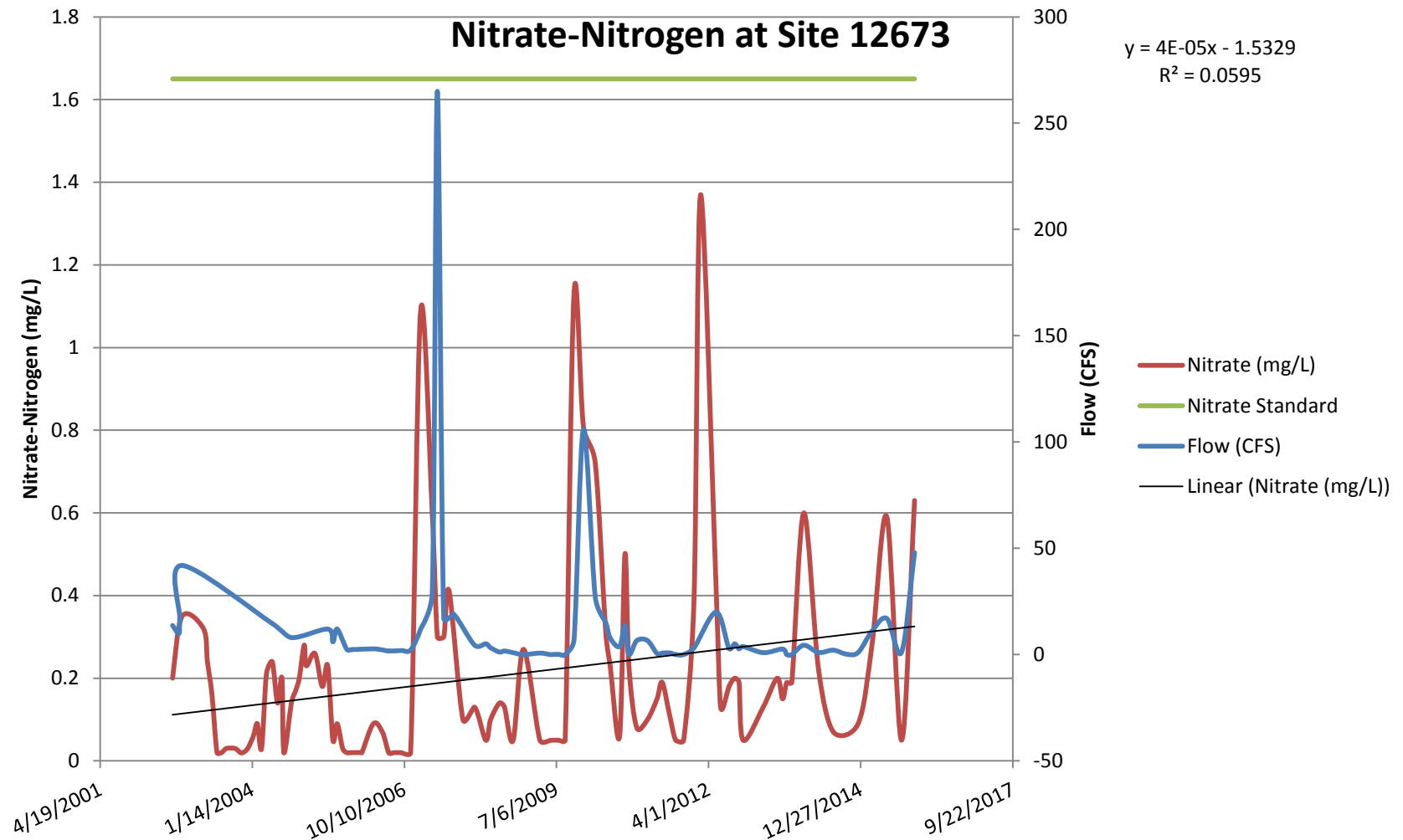
0.22

0.27

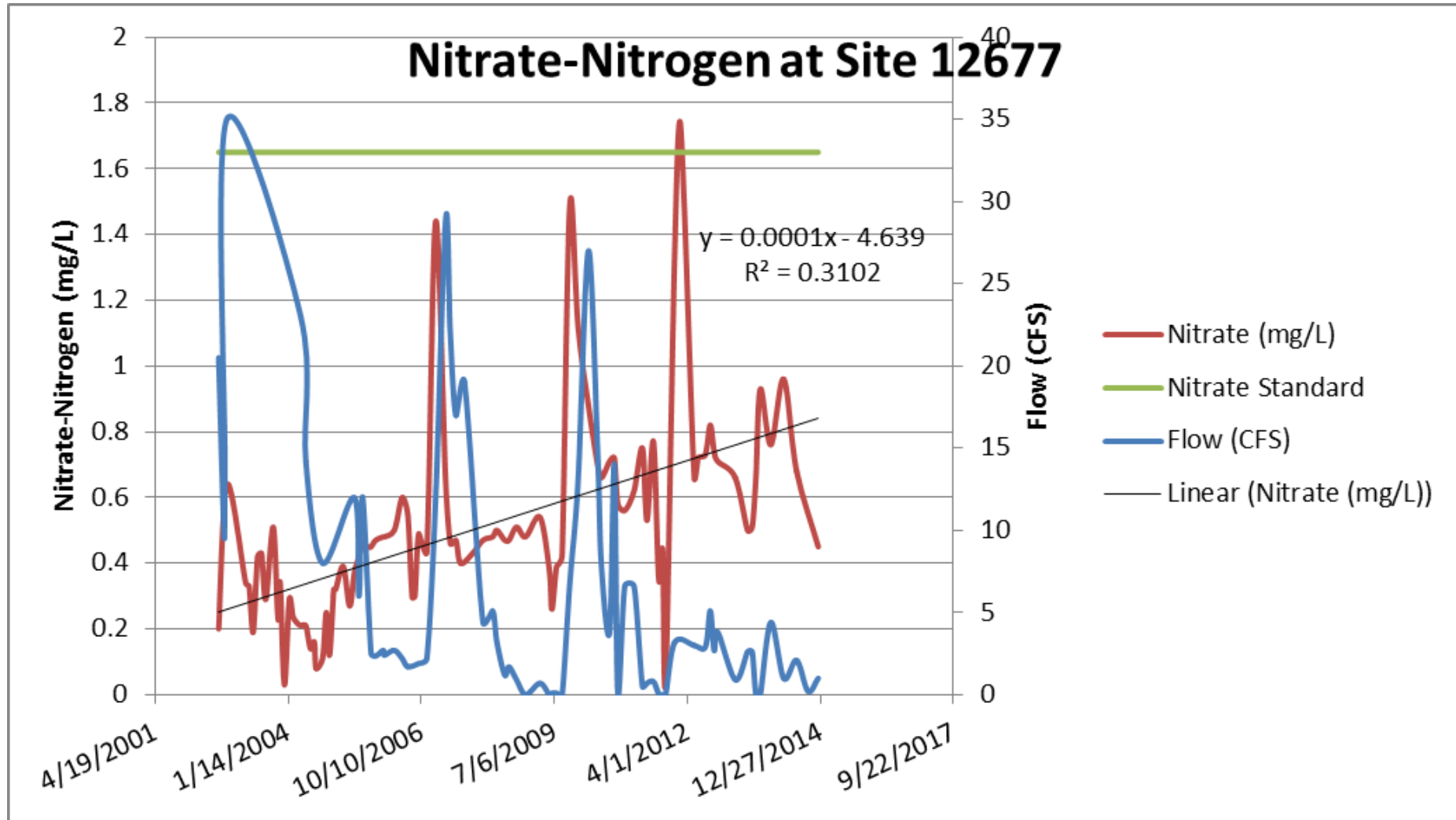
0.21

0.2

Nutrients at Blanco River Confluence



Nutrients at Jacob's Well

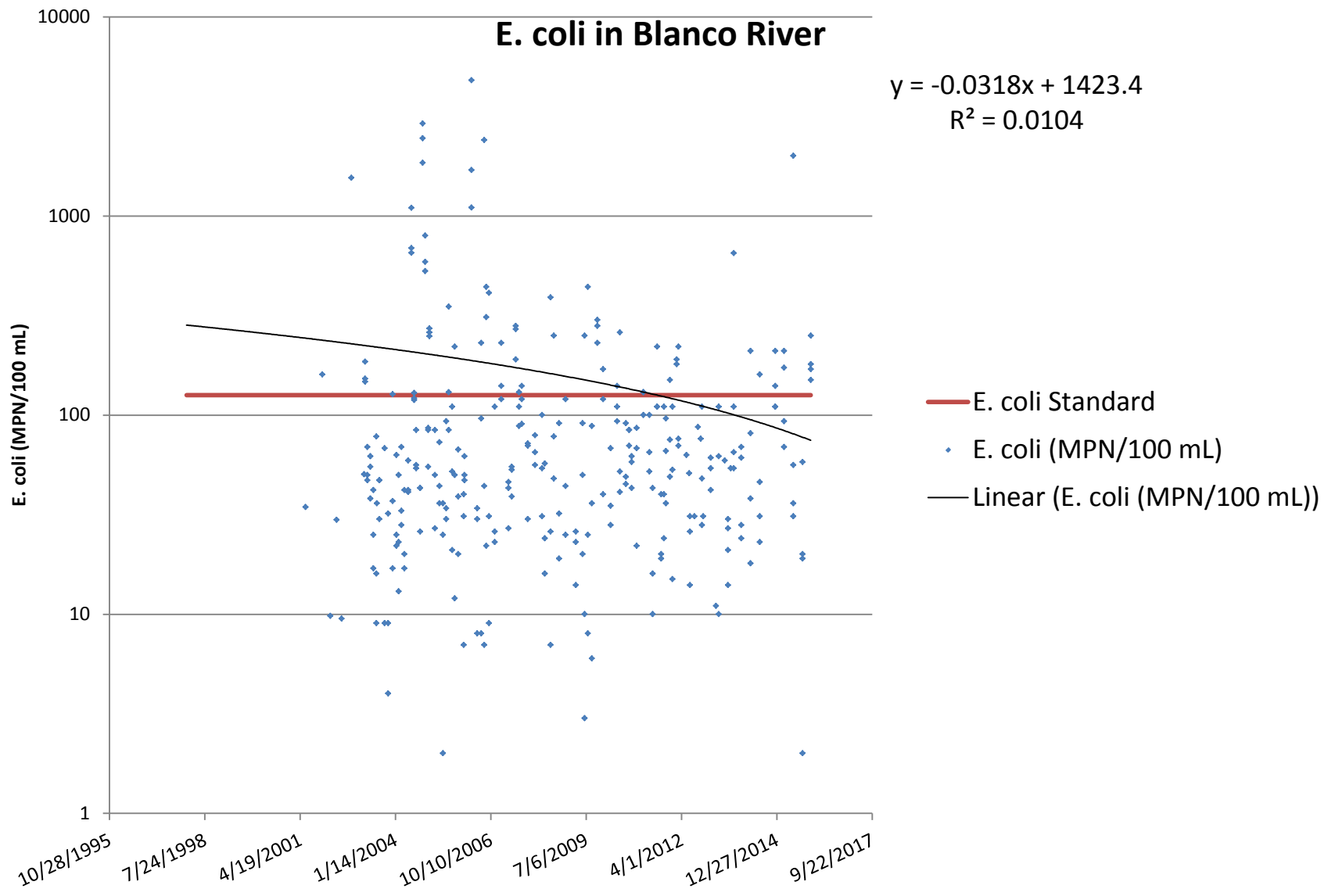


Data Trends and Analysis

- Noted trend decreases included:
 - Suspended solids at Fischer Store Rd.

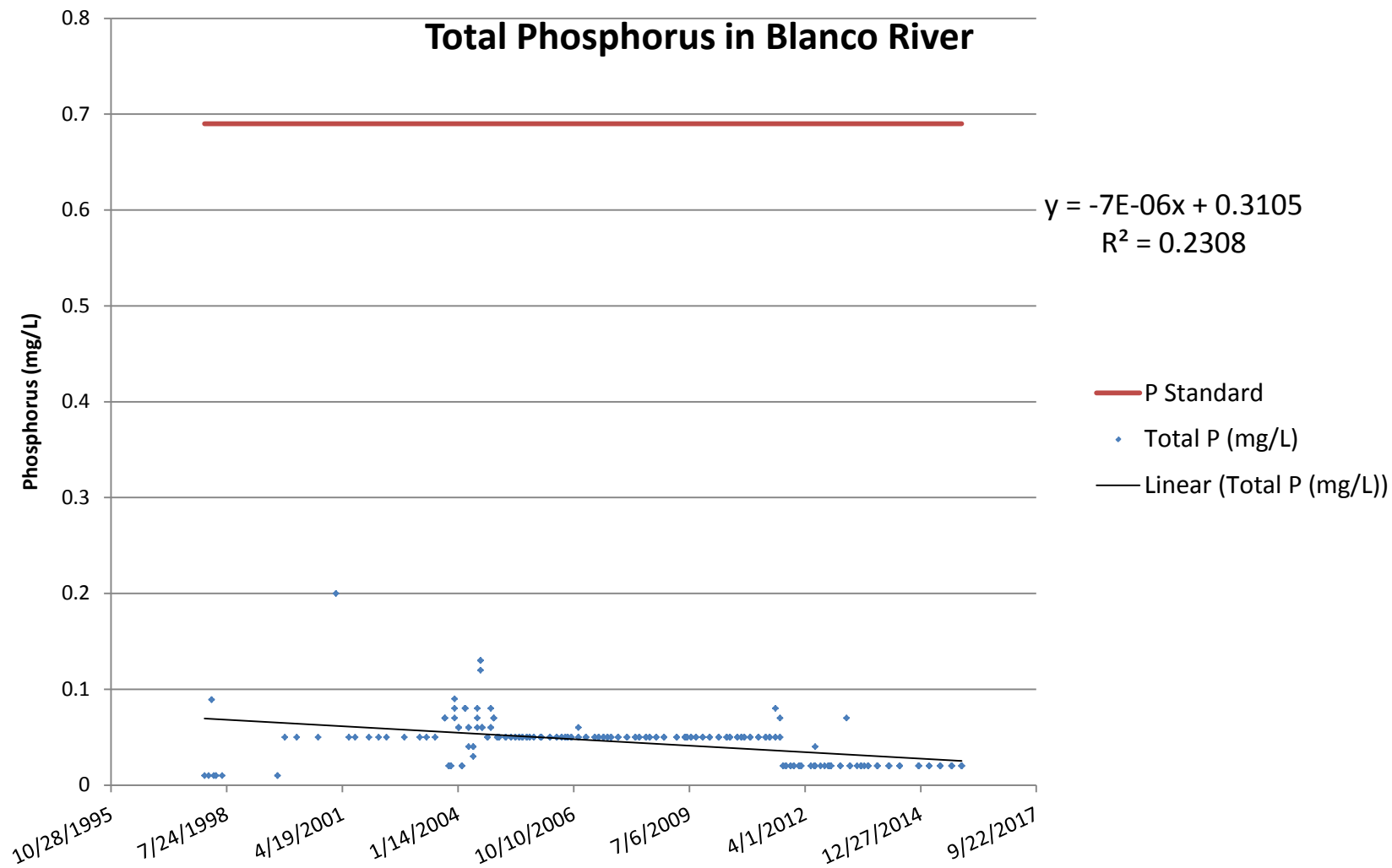
Data Trends and Analysis

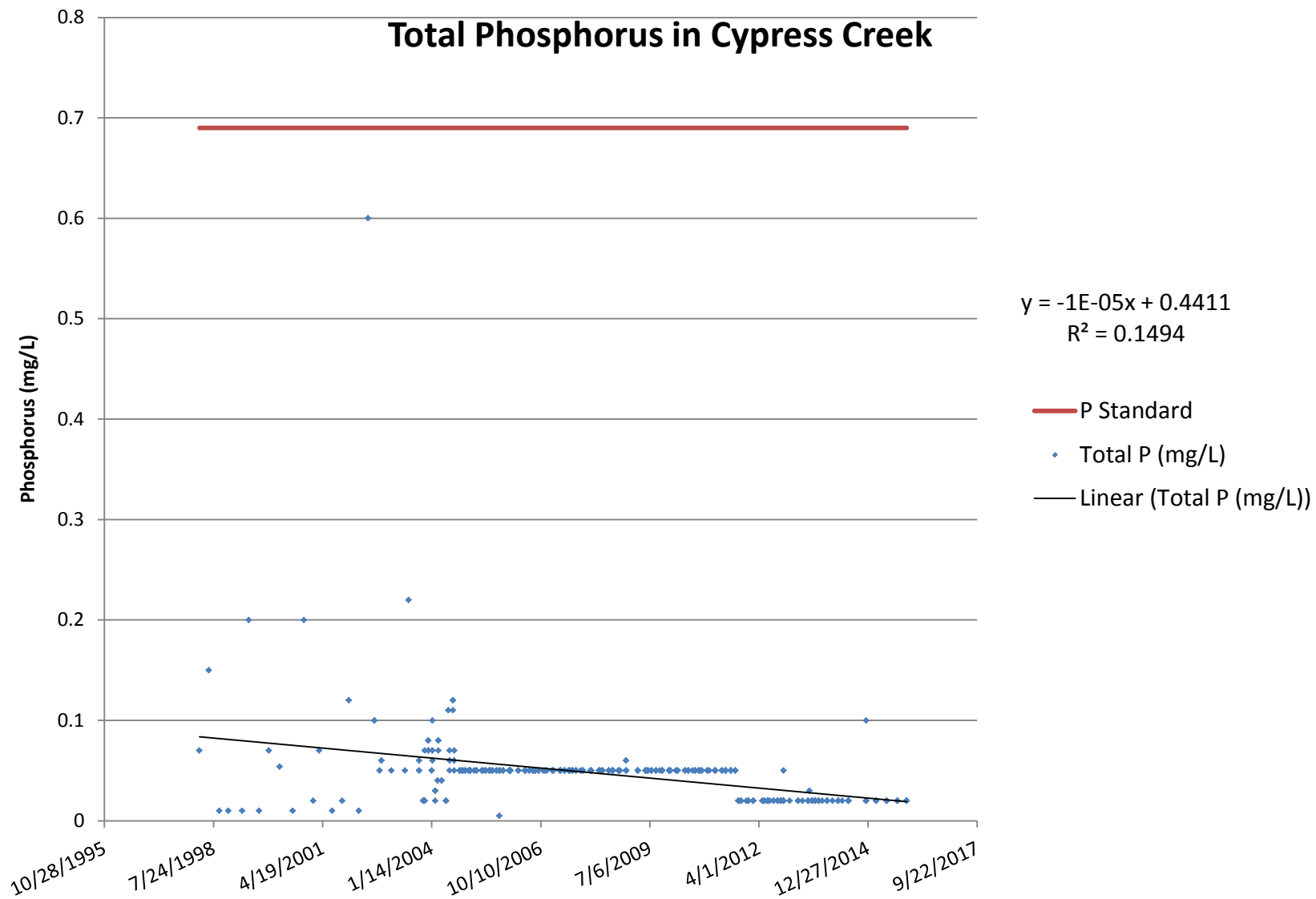
- Noted trend decreases included:
 - Suspended solids at Fischer Store Rd.
 - *E. Coli* values for all Blanco sites except Fischer Store Rd.



Data Trends and Analysis

- Noted trend decreases included:
 - Suspended solids at Fischer Store Rd.
 - *E. Coli* values for all Blanco sites except Fischer Store Rd.
 - Total Phosphorus at all sites





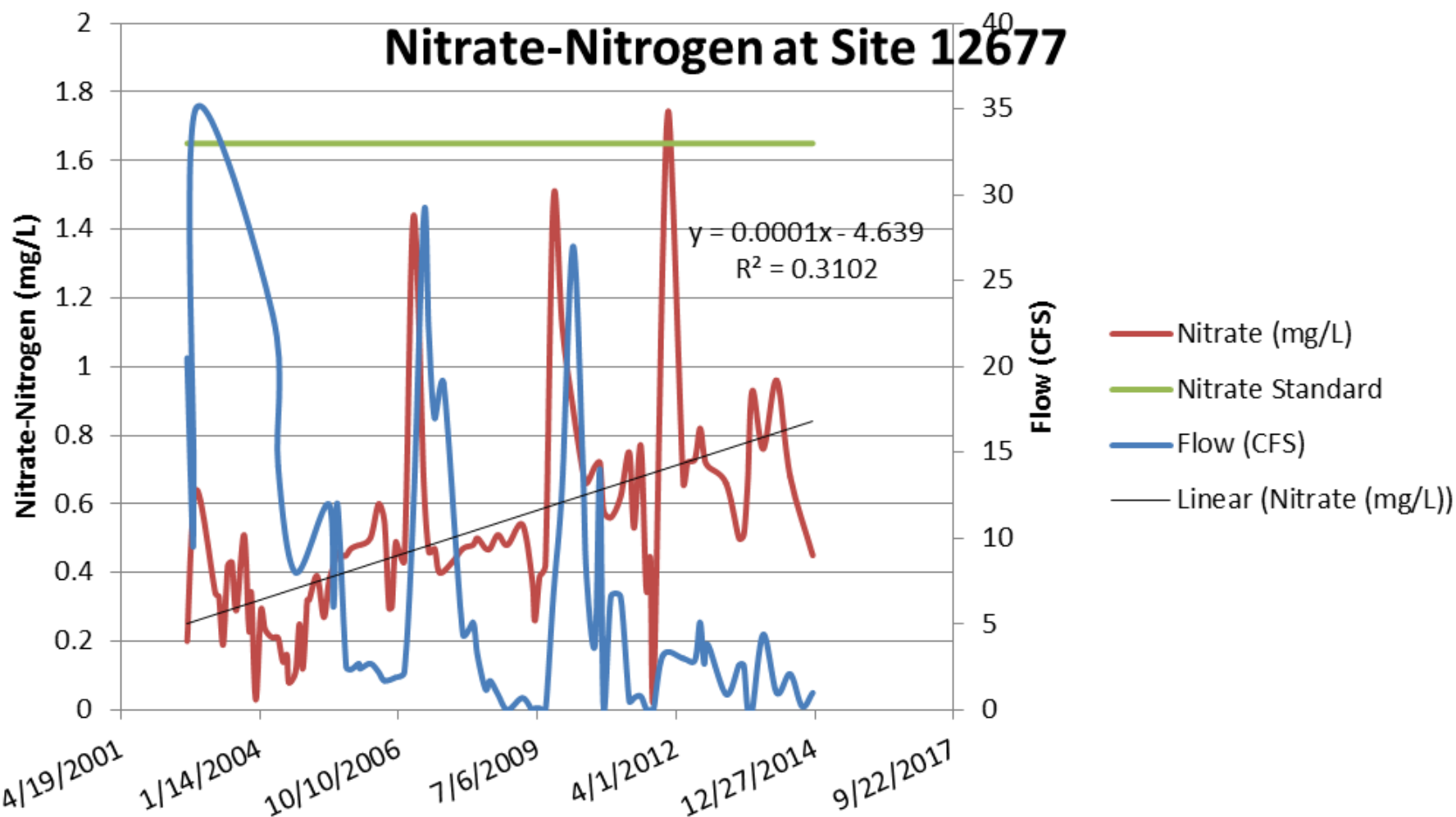
Data Trends and Analysis

- Noted trend decreases included:
 - Suspended solids at Fischer Store Rd.
 - *E. Coli* values for all Blanco sites except Fischer Store Rd.
 - Total Phosphorus at all sites
- However, most regression analyses had a very low R^2 value, suggesting minimal data correlation.

Data Trends and Analysis

- The highest R^2 values were for regressions regarding phosphorus and nitrate levels.
 - Regressions displaying phosphorus decreases in Cypress Creek had R^2 values ranging from 0.35 to 0.39
 - A regression showing a notable increase in nitrate-nitrogen at Jacob's well had an R^2 value of 0.31.

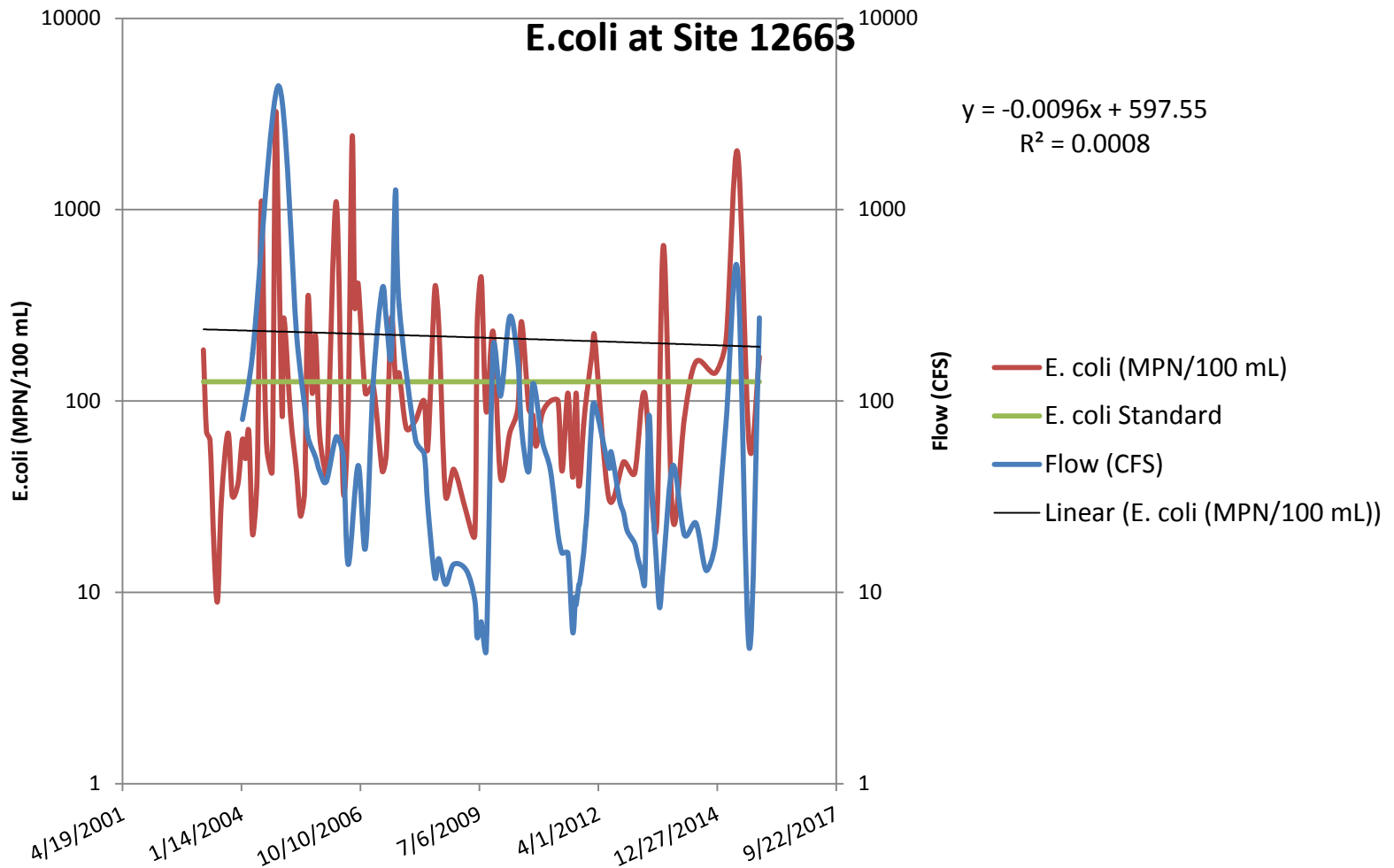
Nitrate-Nitrogen at Site 12677



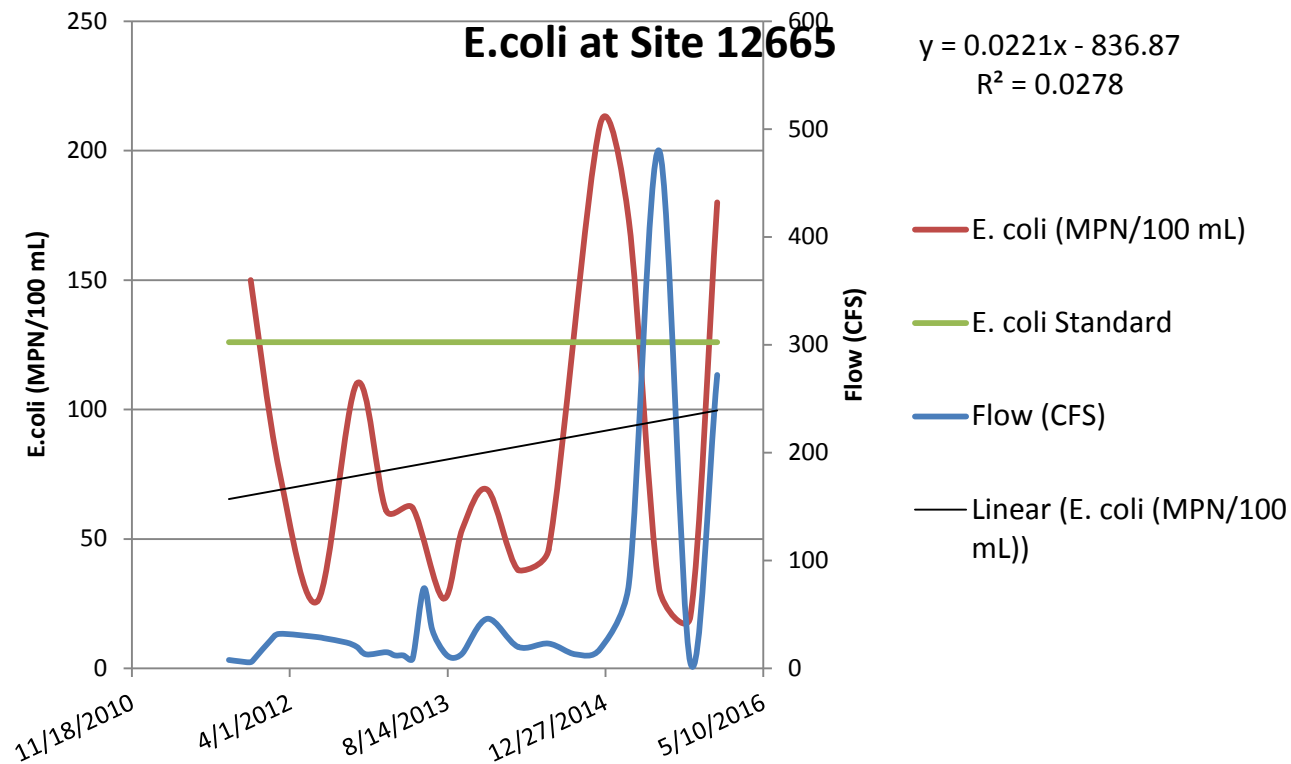
Summary

- Although some trends show increases in *E. Coli* and nutrient levels, additional study is needed
- Results are highly variable and are often heavily dependent on flow and rainfall times/totals
- Major spikes in flow levels on Blanco and Cypress post-floods
 - *E. Coli* levels often increased in short term along with increase in flow

Blanco River at Pioneer Town



Blanco River at Fischer Store Rd.



Next Steps

- New suggested site by WVWA: Blanco River at Rocky River Ranch
 - Slightly downstream of Deer Creek Confluence
 - City of Wimberley has permit to discharge wastewater
 - Discharge could start spring or summer of 2017
- Next CRP Monitoring date: April 2016 (exact date TBA)
- Future analyses?

THANK YOU

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