

Retrospective of 7,071 *E.coli* samples from Bull Creek District Park and Barton Springs Pool Austin TX

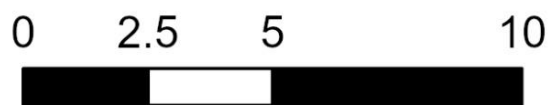
Urban Riparian Symposium
2/21/2025

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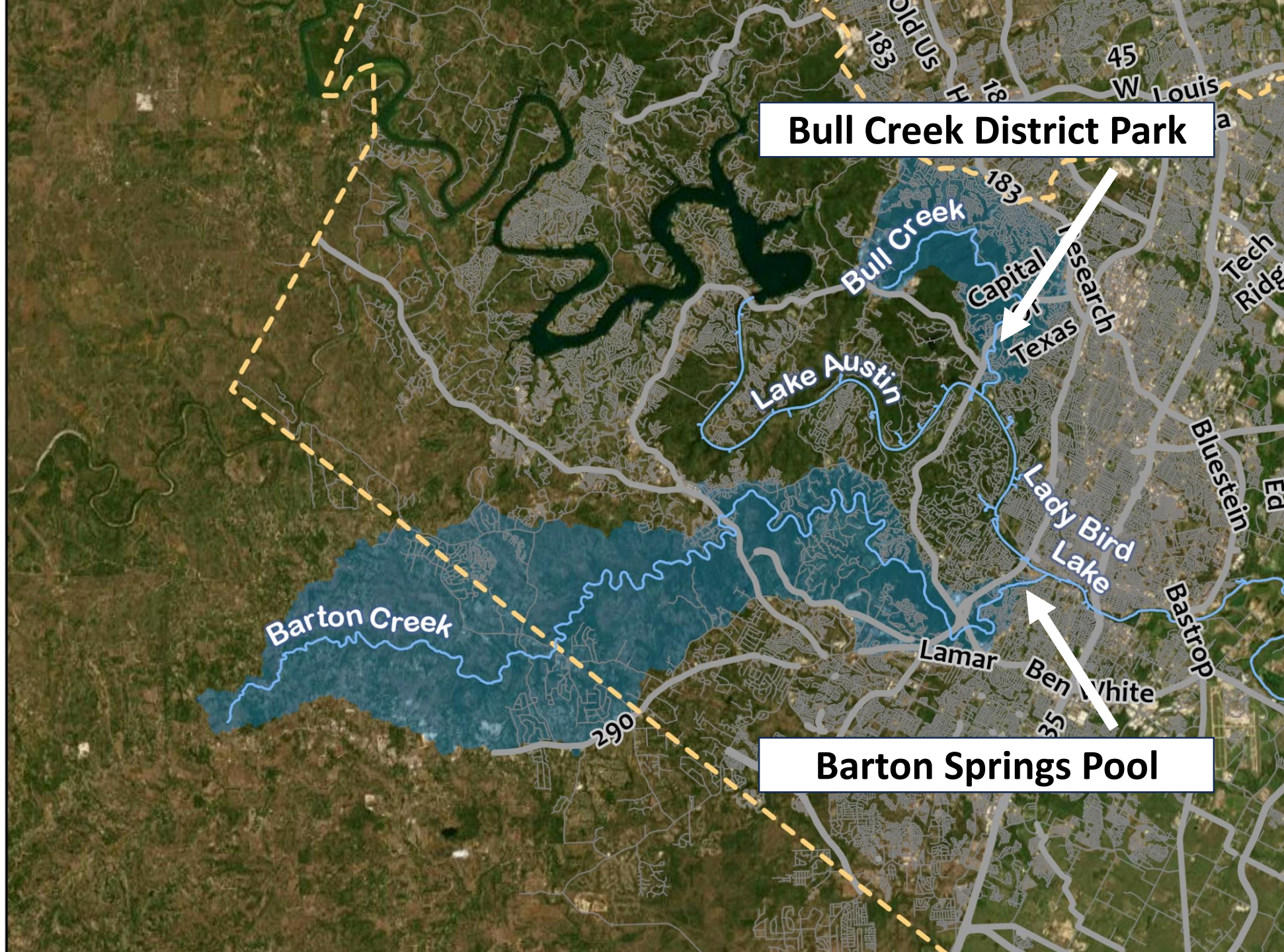
Legend

-  Selected Waterways
-  Major Roads
-  Streets
-  Watershed
-  Travis County



Miles

Setting



high *E.coli* concentration (implies other pathogens)

wastewater infrastructure spill/scare

Bull Creek District Park

in the water that we recreate in !?!?!?

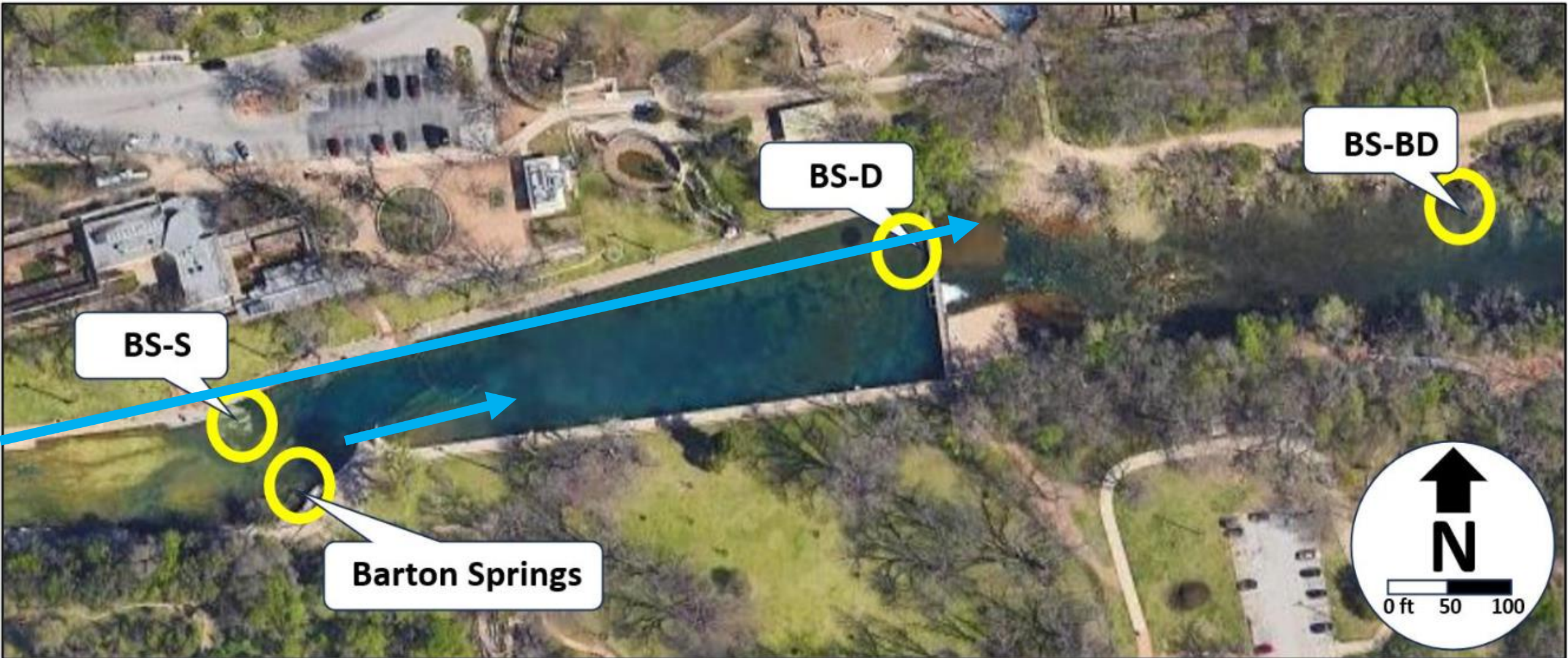


Think of the children !!!

Barton Springs Pool

What'r we gona do ?!?!?!?





wading,
swimming

Study Sites

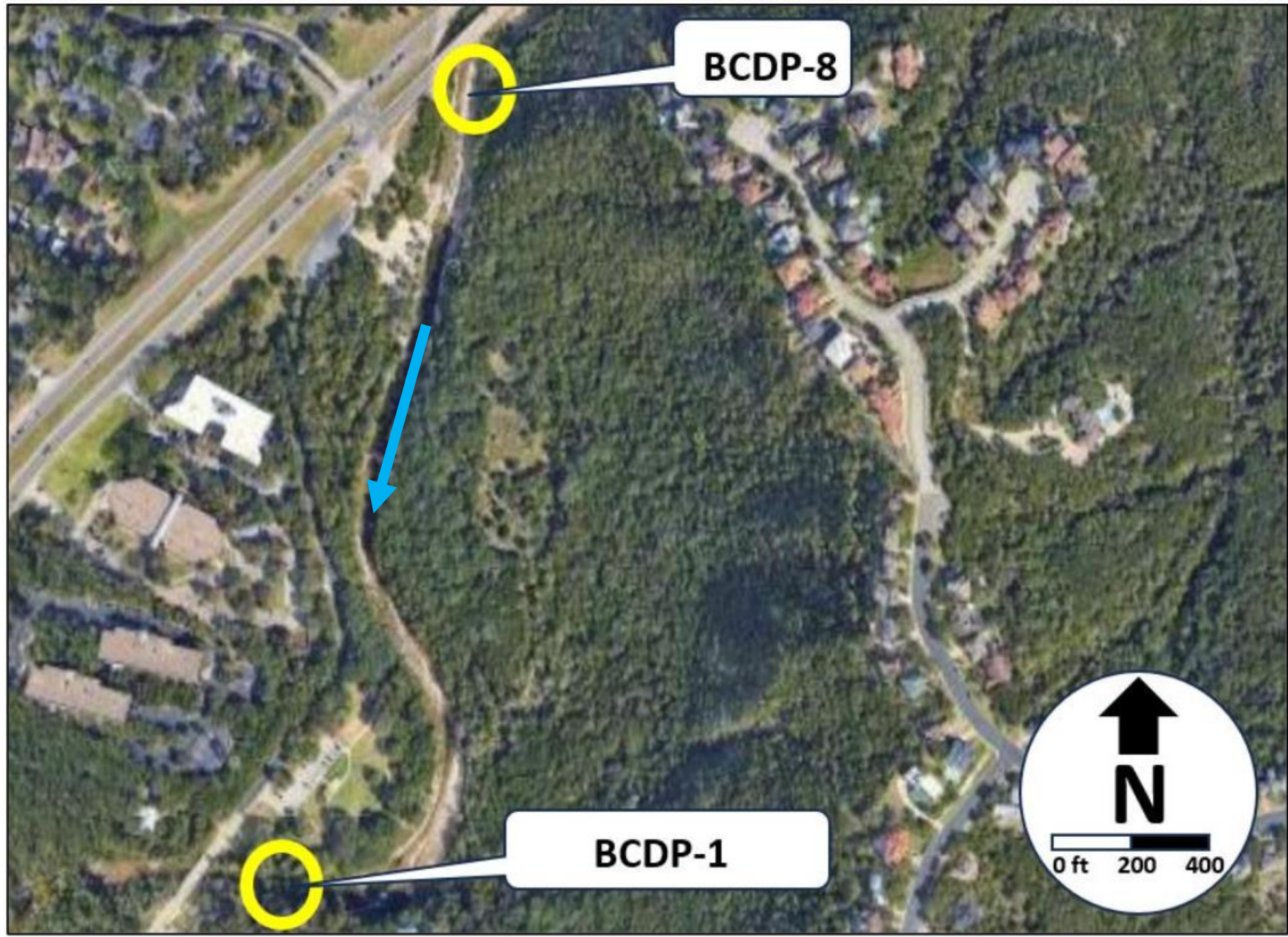
Barton Springs Pool

wading,
dogs

Study Sites

Bull Creek
District Park

Hiking,
wading,
dogs,
etc.



Site	Total number of samples	First Sample Date	Most recent sample used in this analysis
Barton Springs (near main springs)	1630	04/21/2003	08/02/2023
BS-S (north steps)	1634	04/21/2003	08/02/2023
BS-D (near dam)	1632	04/21/2003	08/02/2023
BS-BD (below dam)	849	07/31/2014	08/02/2023
BCDP-1 (downstream)	663	03/10/2008	08/02/2023
BCDP-8 (upstream)	663	12/10/2007	08/02/2023

7,071 samples!!



Started with “is it safe for recreation”....

....and then

THINK OF THE POSSIBILITIES!

How much does recreation affect a water body?
(natural swimming pool and creek)

- Daily differences
- Weekly differences
- Seasonal differences
- Rainfall runoff impacts
- Carrying capacity
- Manage recreation!

Sampling Design

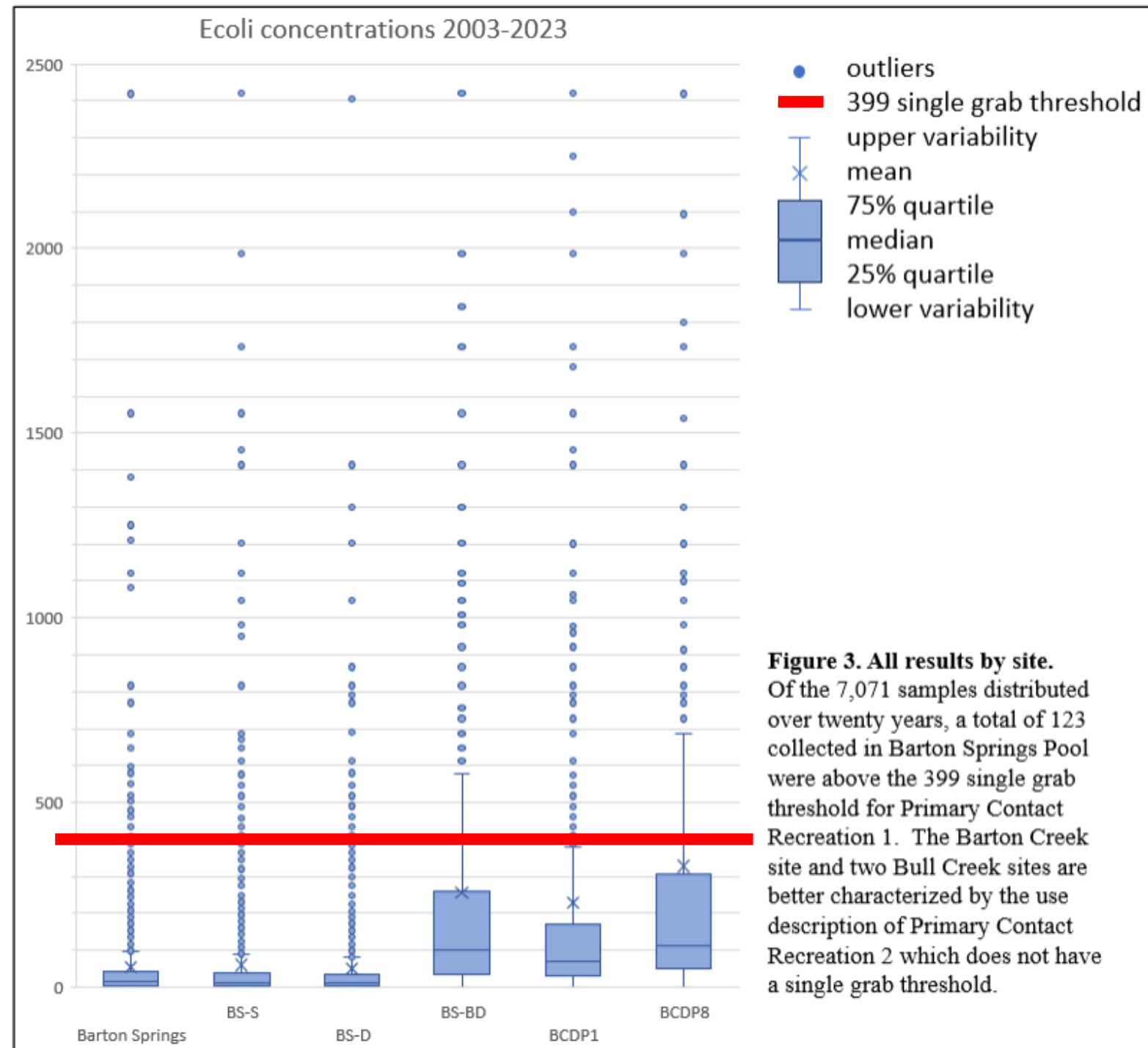
- one or twice/week (typically Mon/Wed or Tue/Thur)
- usually mid-morningish, but variable 9am-3pm
- rain or shine, regardless of antecedent conditions
- no additional data (time of day, # people, etc)

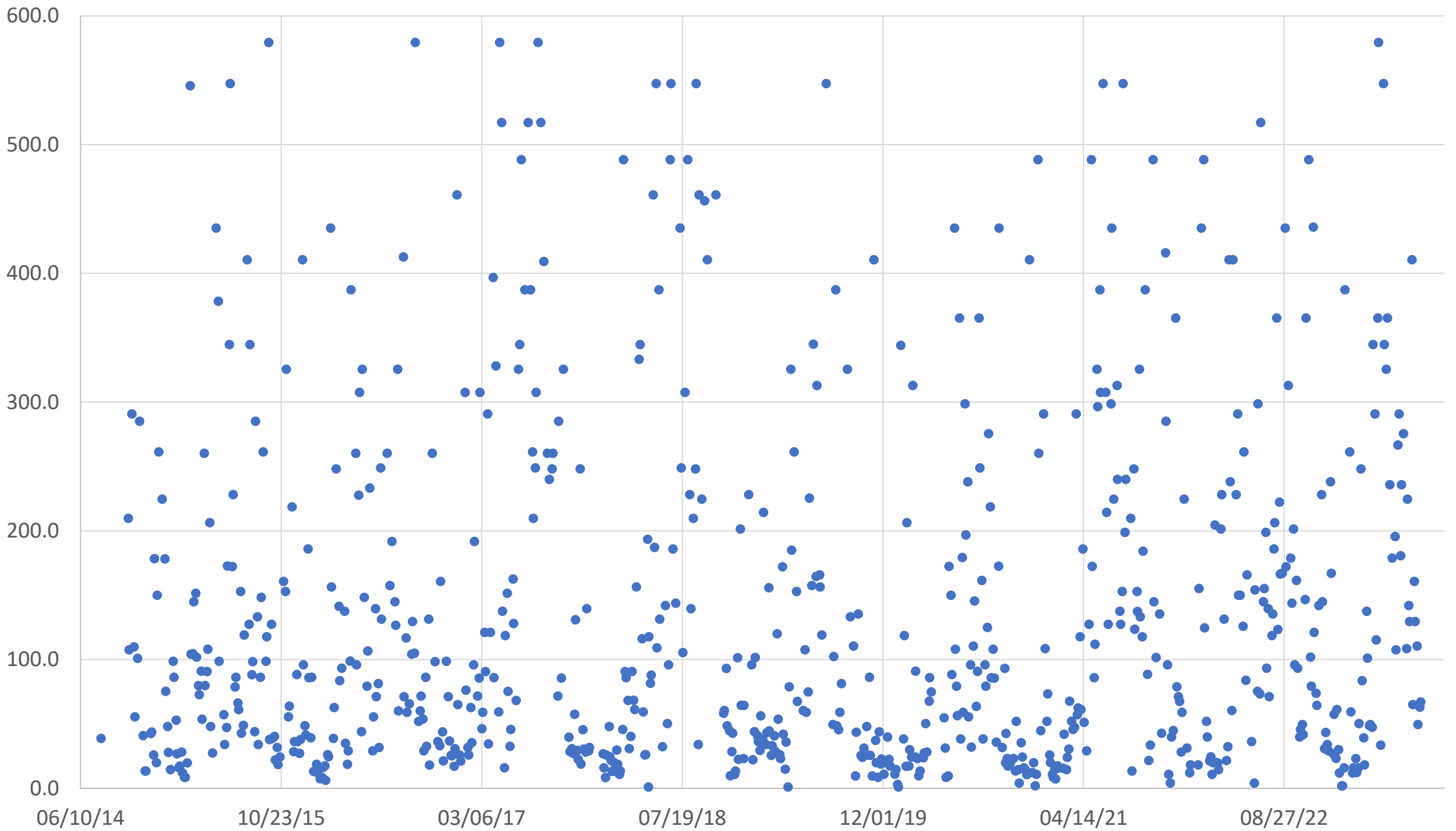


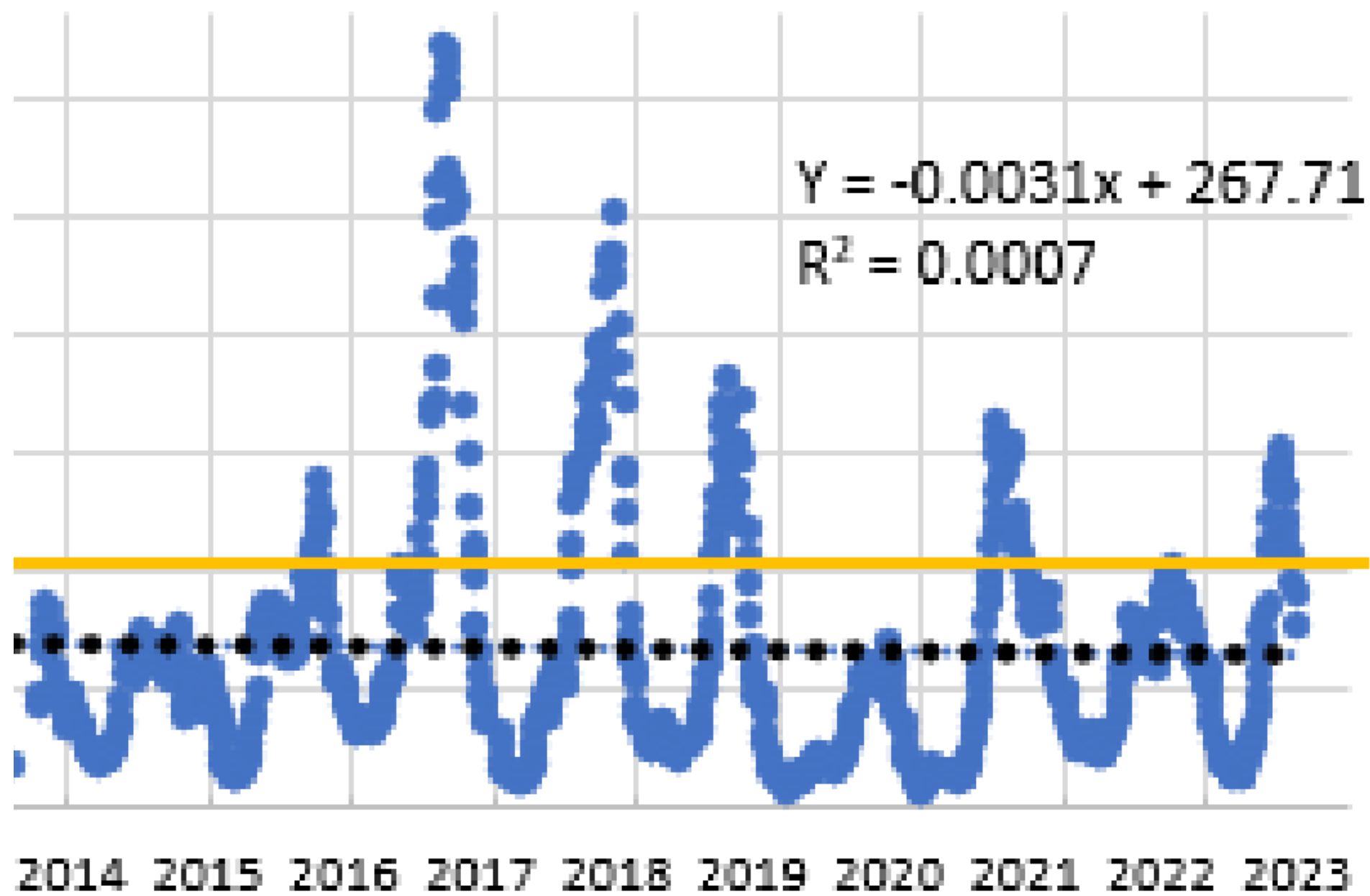
Day	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Total number of samples collected during the period of record	2,390	968	2,182	1,375	149	3	3

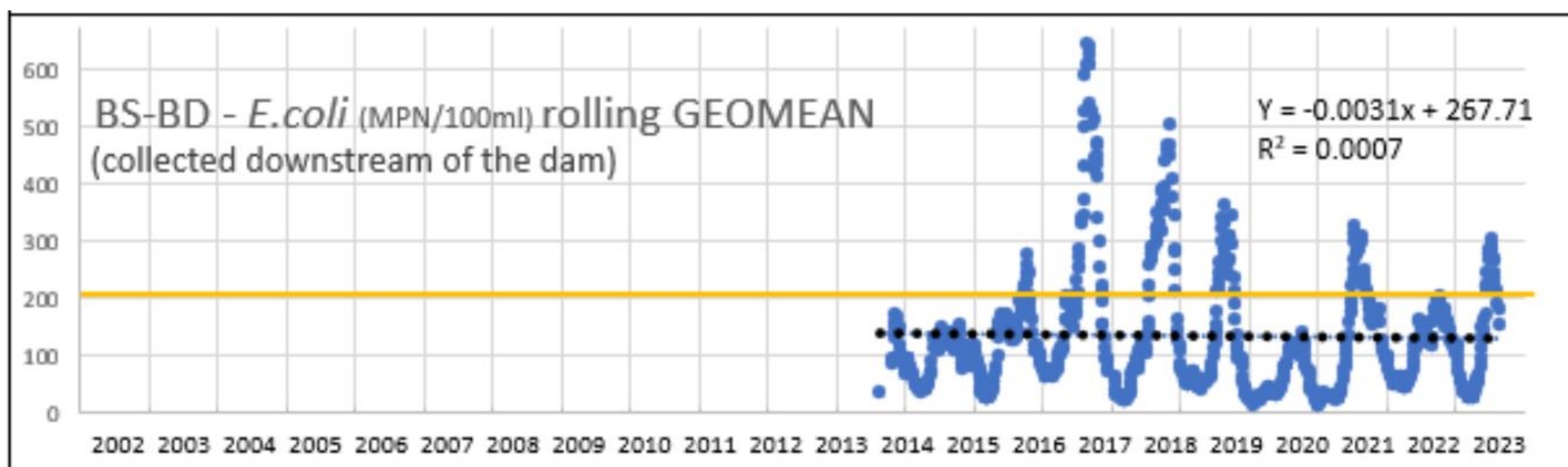
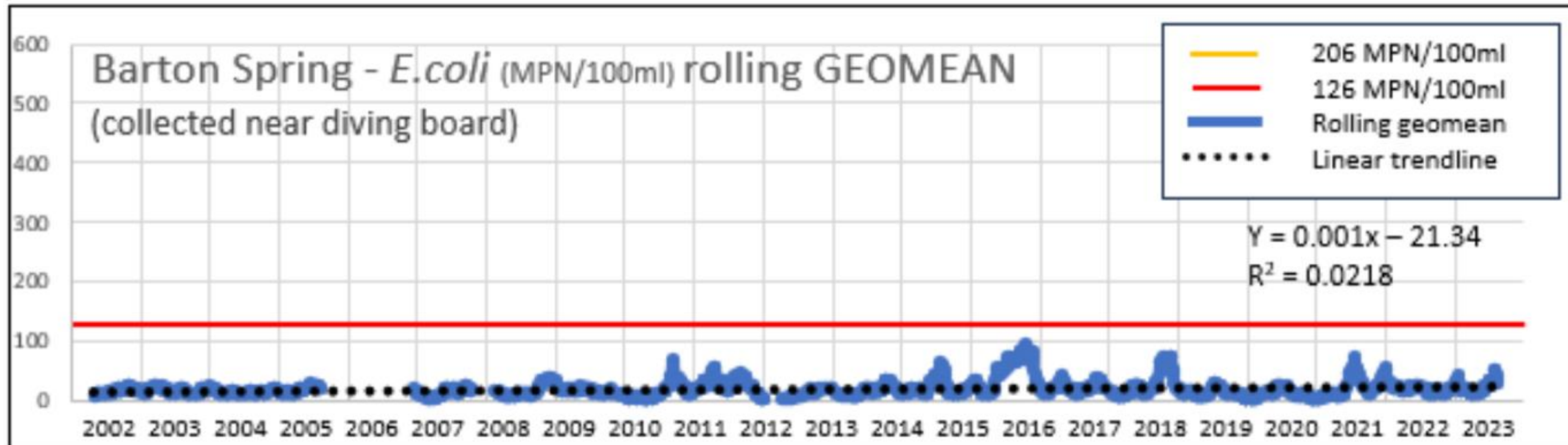
So.....no recreation correlations possible

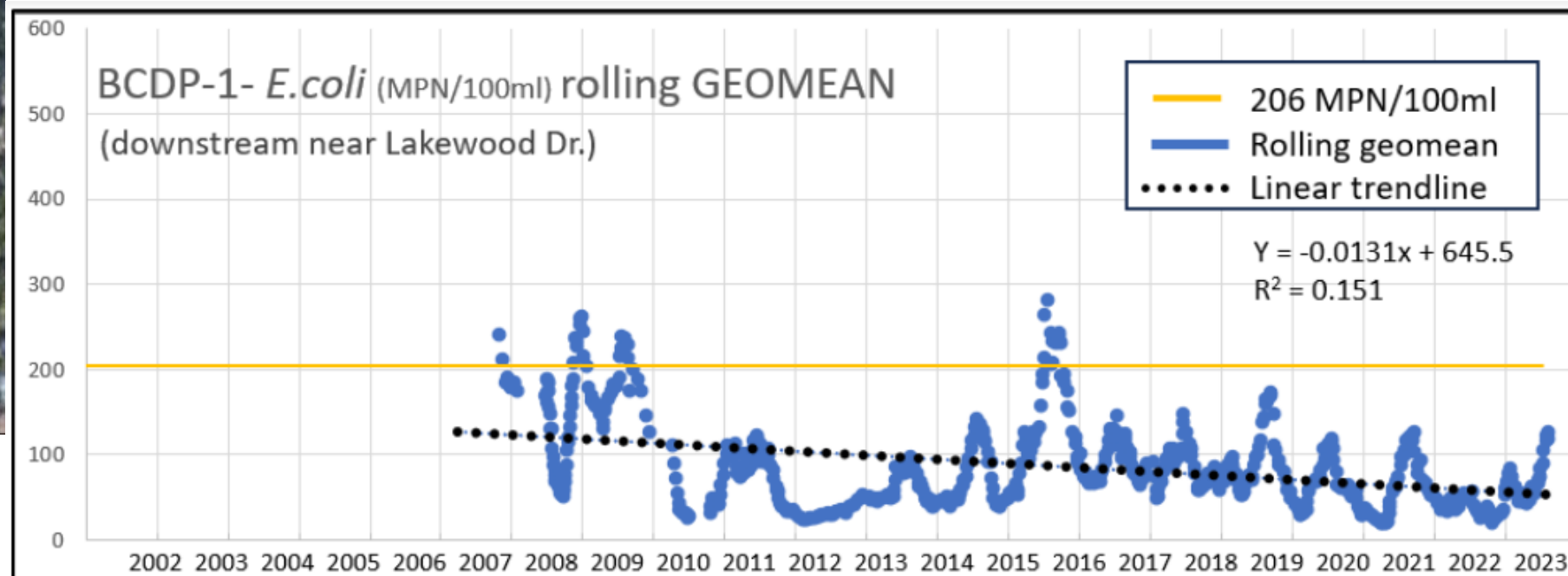
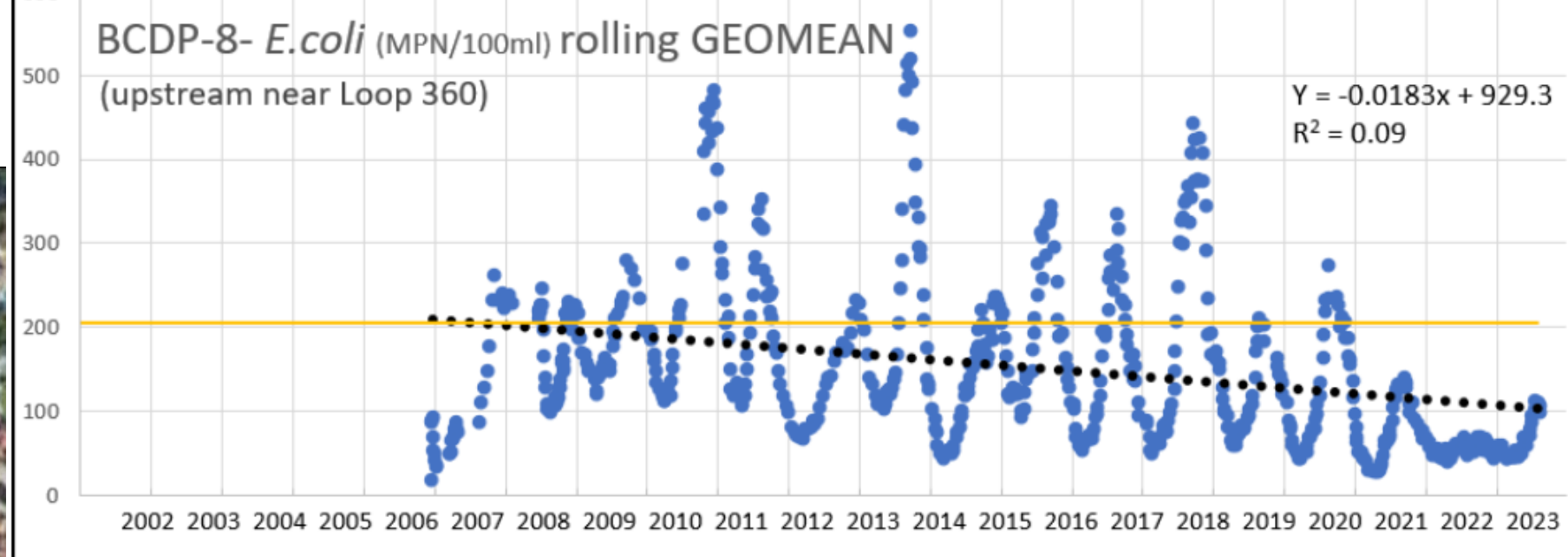
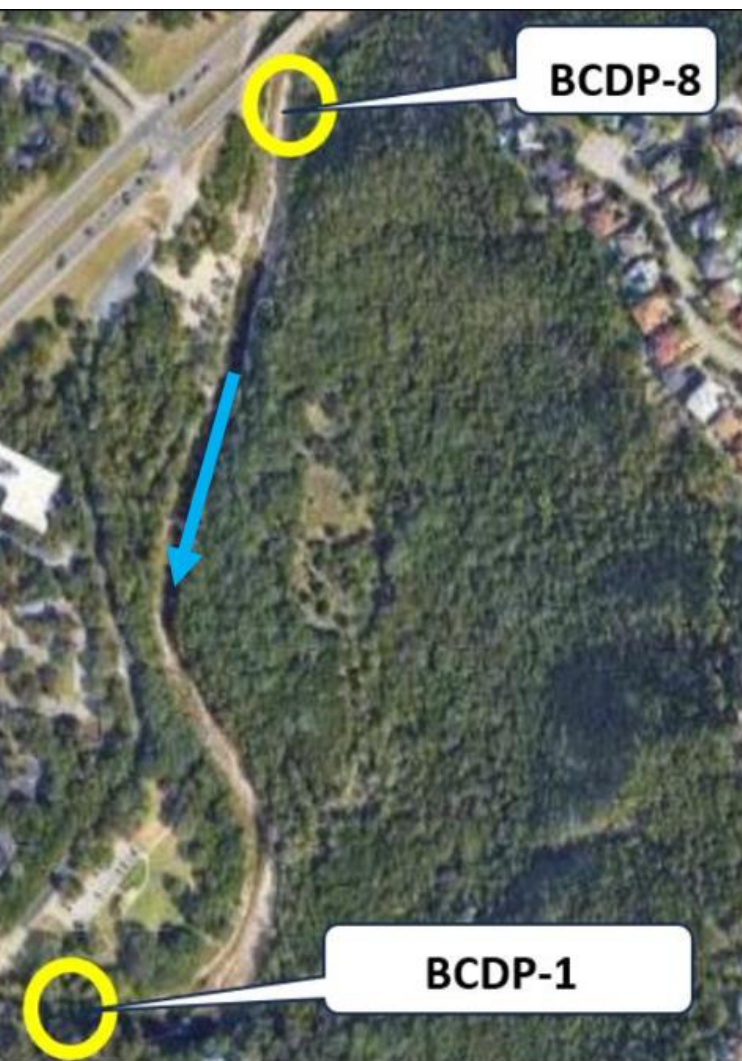
....but THINK OF THE TRENDS !!!!!











Conclusions:

- Barton Springs Pool sites geomeans are below State threshold for swimming
- Creek sites geomeans are below threshold for wading
- Temporal trend flat at Barton Springs
- Temporal trend reducing concentration at Bull Creek District Park
- Continued sampling in the current regime is unlikely to reveal new insights

➤ Suspended current sampling regime (saved \$ tens of thousands per year)

Take Home:

Three important things in any scientific study:

1) Experimental Design

2) Experimental Design

3) Experimental Design

- Sampling protocol (frequency, time, day, observation, etc.)
can limit use of the data
- Seasonal differences in E.coli are significant
(most salient using geomean rather than scatter plot)
- Possible to have big differences over a short distance



Retrospective of Austin Public Health *E. coli* sampling at Barton Springs and Bull Creek District Park

RR-23-01

December 2023



Questions?