Small Watershed Site Identification

Nontidal Network Workgroup
January 31st, 2023

Objective and purpose

Build a database of all water quality monitoring activity within the Chesapeake Bay.

Identify areas lacking monitoring data reported to the Water Quality Portal.

Create an objective way to investigate sampling locations and the information associated with them.

Emphasis on small watersheds with high agricultural impact, low urban development, and nutrient sampling with data available.

Could be used to expand the Partnership Network if new locations were going to be adopted.

Examining established small watershed sampling sites

All sites within the Chesapeake Bay were gathered from the Water Quality Portal (NWIS, STORET, STEWARDS-ARS, etc.).

Water Quality Portal sites required at least five years of nutrient data collected and six or more sampling trips logged.

Contacted 62 different conservancy, environmental, and river keeper groups for sampling site data that's not reported to the Water Quality Portal.

Analyzed all water quality data collected to find 5-10 small watershed monitoring sites that could become part of the Partnership Network.

Monitoring database site selection

Completed on the Water Quality Portal

All sample locations. known: 353,071 sites unknown: 2,654 sites*

Was nutrient data collected?

Approx. 60,000 sites

Number of nutrient samples collected (6 or more).

Approx. 15,000 sites

Proximity to current NTN sites.

Approx. 15,000 sites

Within a HUC12 watershed: >50% agricultural/ <10% urbanized.

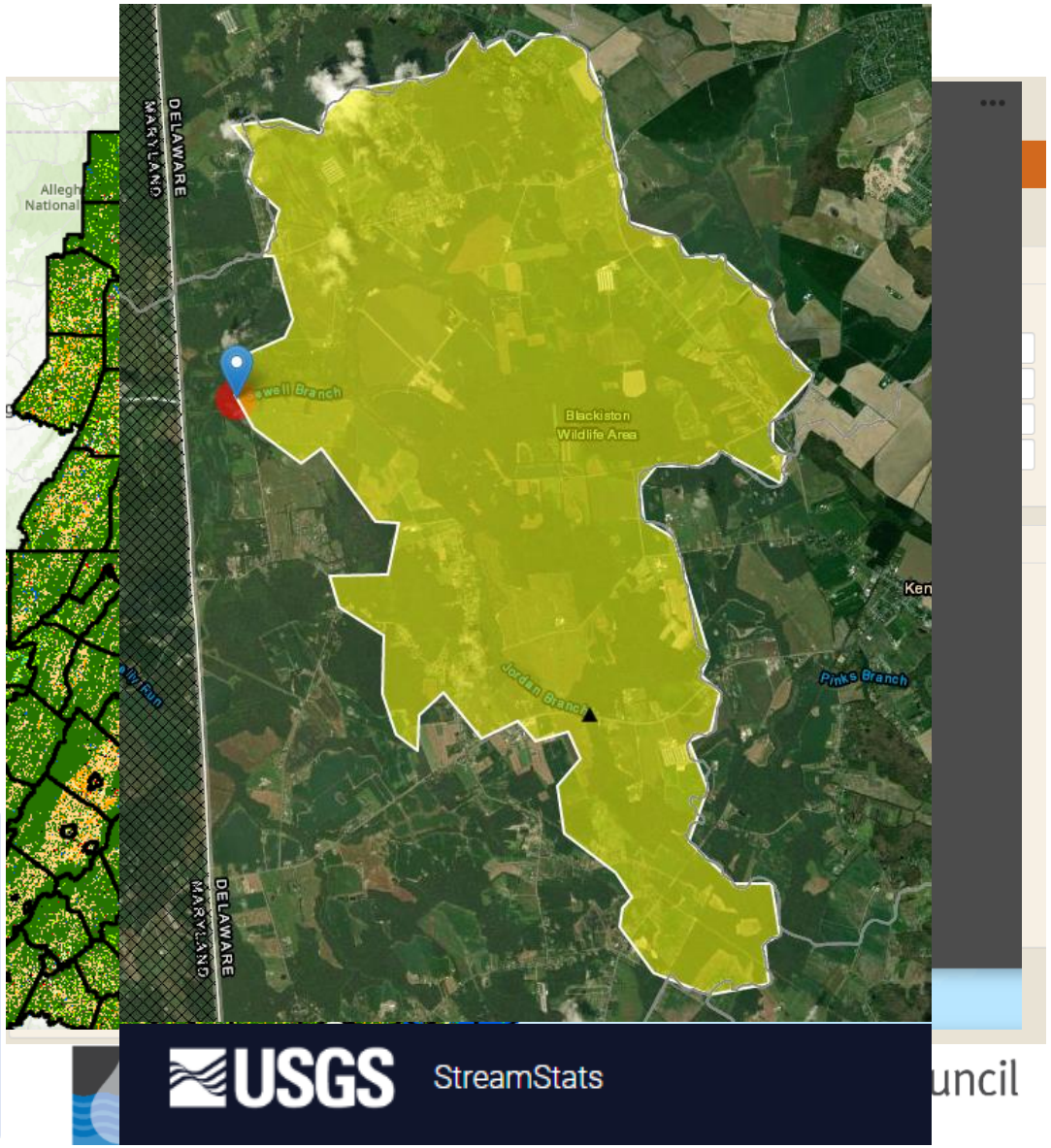
2,412 sites

Years of sampling (5 yrs. or more).

163 sites

Upstream of the sample location: >50% agricultural/ <10% urbanized.

49 sites

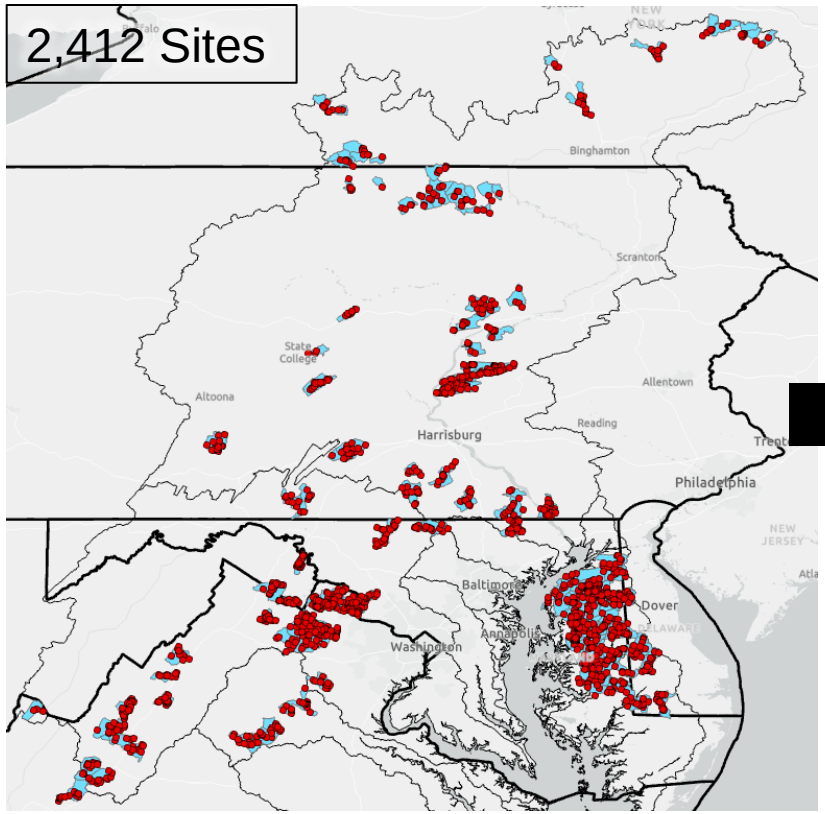


Impervious and agricultural land use/land cover maps provided by Chesapeake Bay Program Data Team.

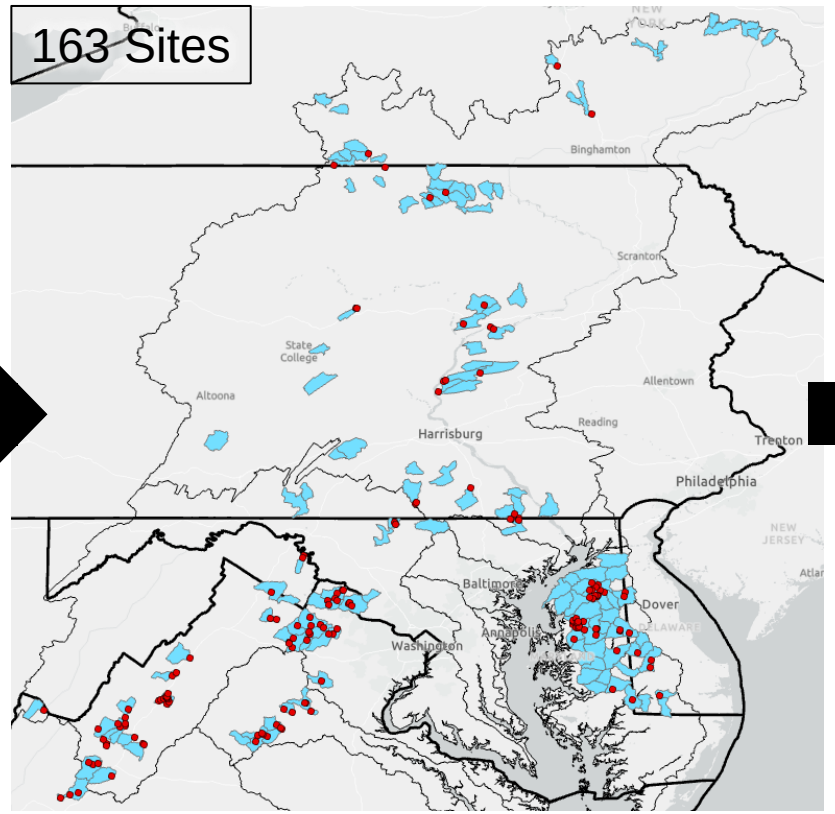
* Zero unknown sample locations made it to the final 49 sites.

HUC12 upstream sampling selection

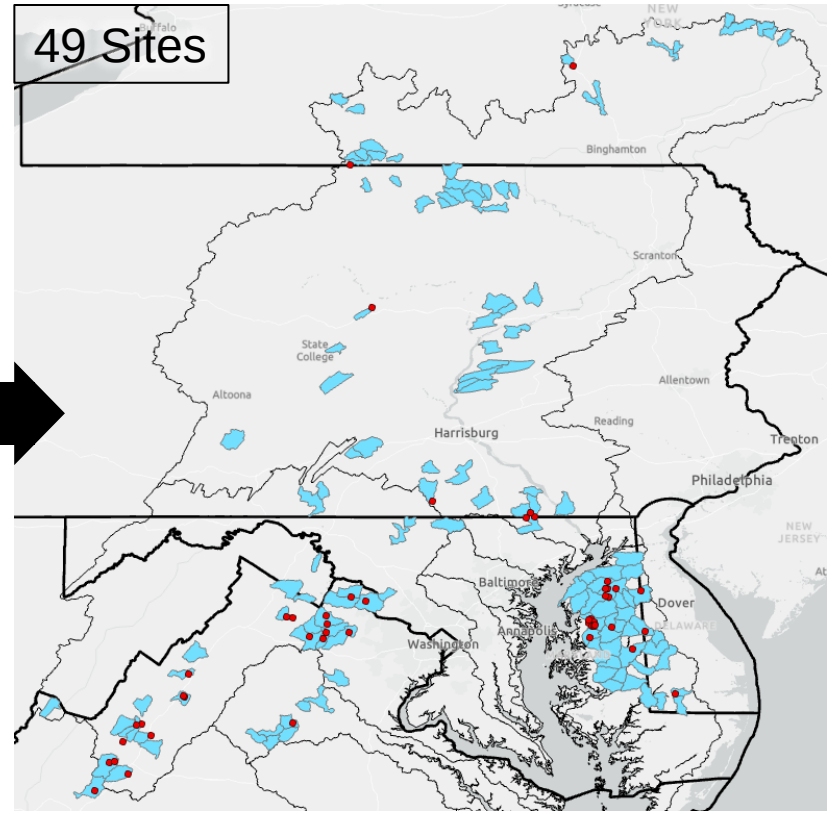
- Average size of HUC12 watersheds 30 sq. mi.
- Used HUC12 agricultural/impervious percent breakdown and upstream agricultural/urbanized percent breakdown to find potential sample sites.
- Looked for sites with the smallest upstream watershed areas (<5 sq. mi.).



HUC12 watershed: >50% agricultural/ <10% urbanized



HUC12 watershed: >50% ag./ <10% urban. and 5+ years of sampling



Upstream of the sample location: >50% agricultural/ <10% urbanized

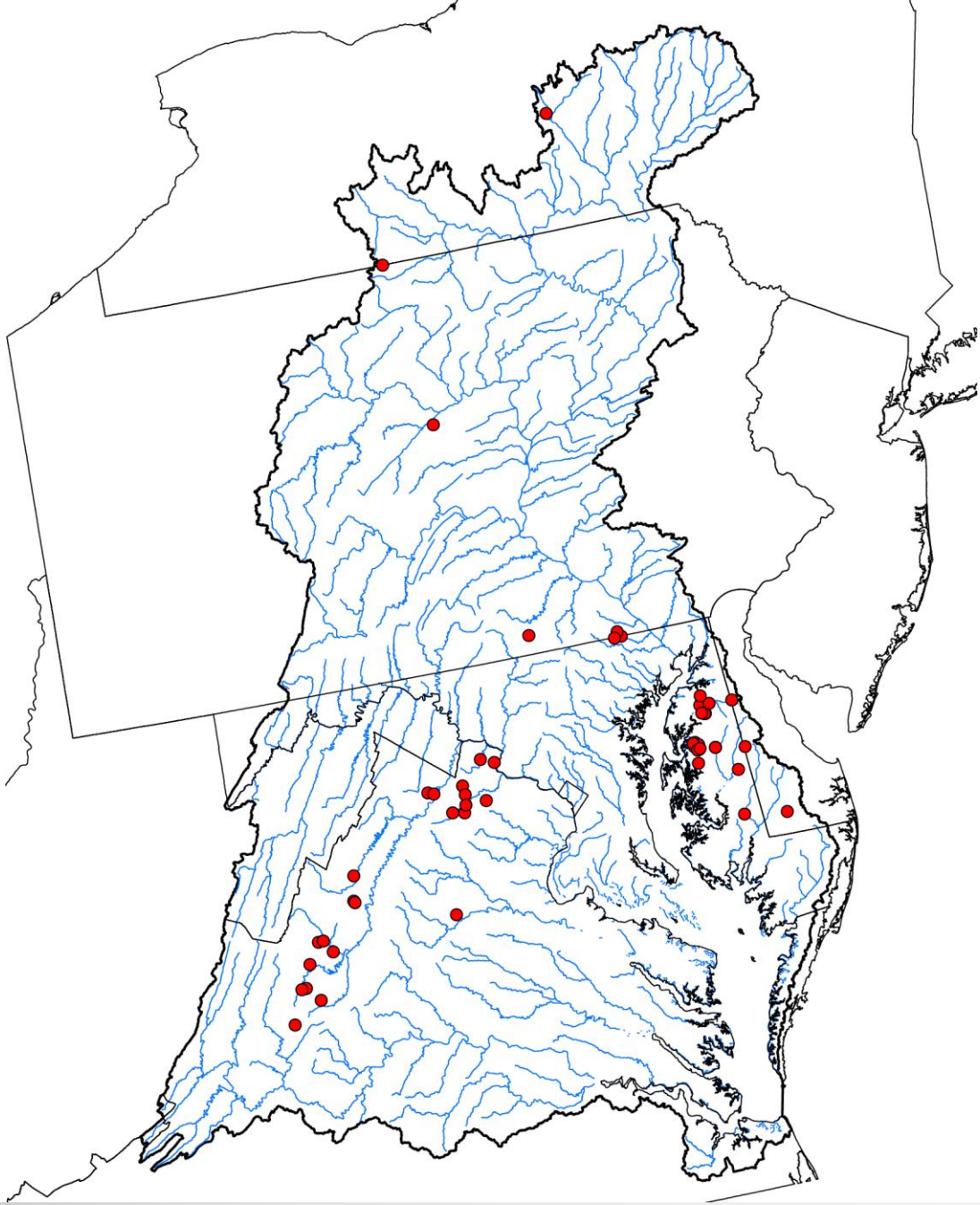
49 candidate monitoring stations were identified

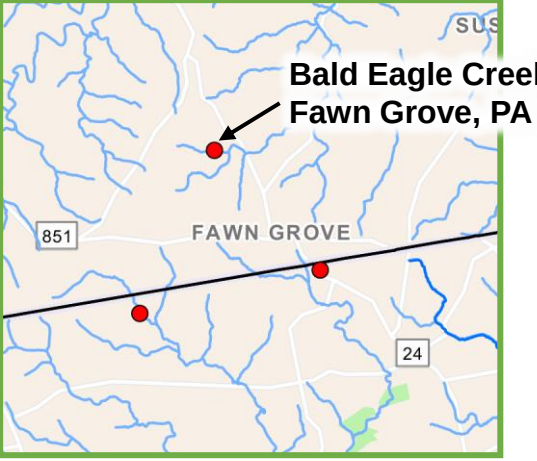
Stations are located in five states.

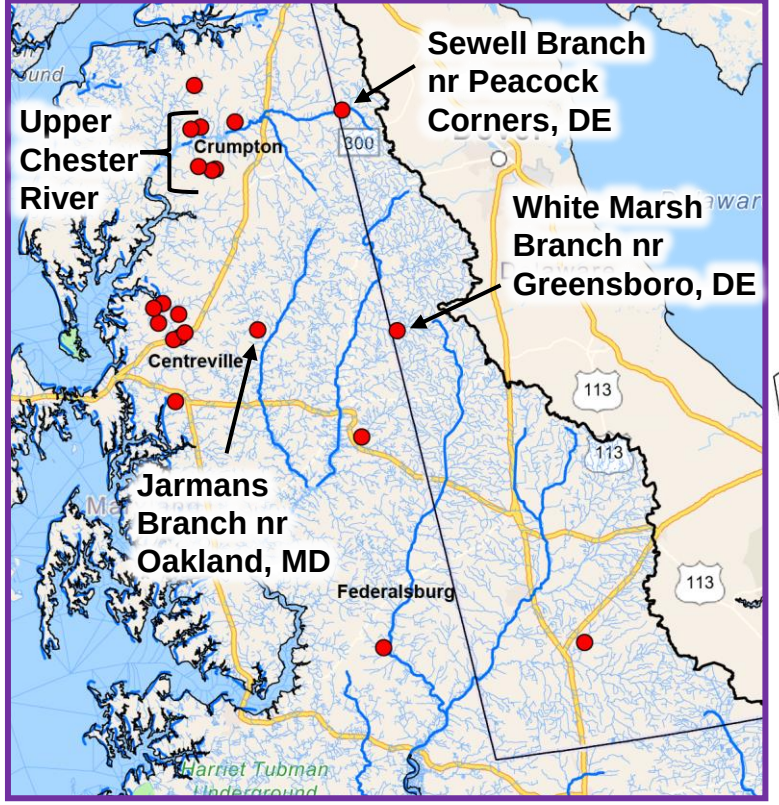
State	Number of Stations
DE	3
MD	19
NY	1
PA	4
VA	22

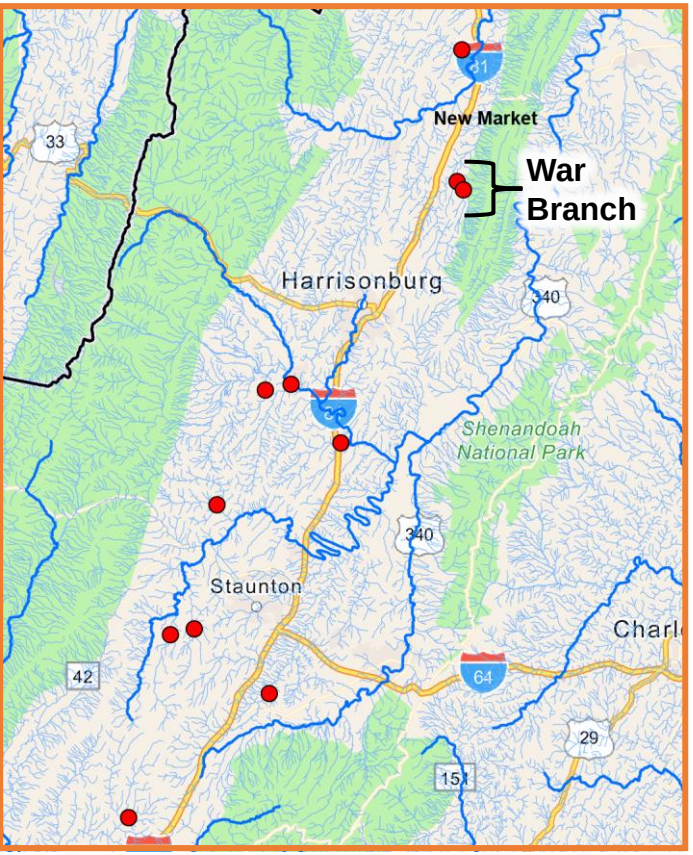
Stations represent data collected by USGS and state agencies.

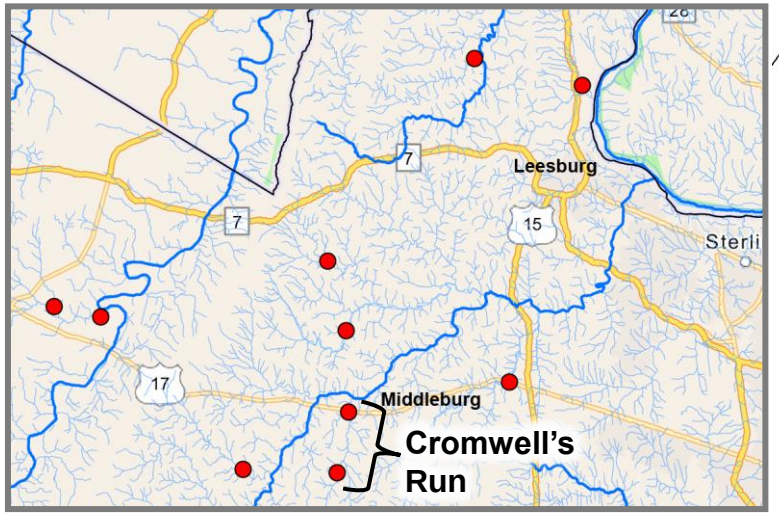
Organization	Number of Stations
MDE	10
DENREC	2
VADEQ	20
PADEP	1
SRBC	3
USGS	13

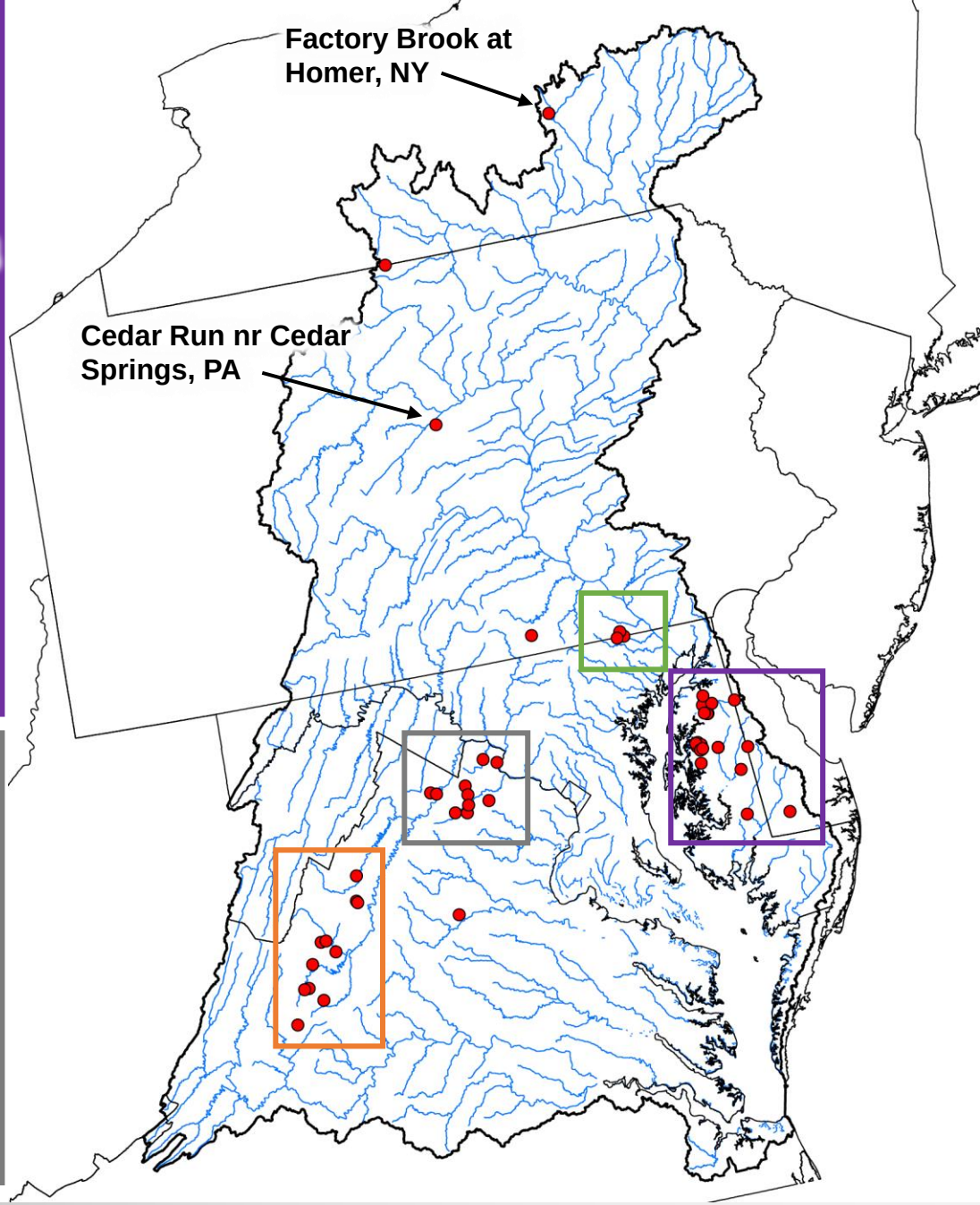



Bald Eagle Creek nr
Fawn Grove, PA
FAWN GROVE
851
24

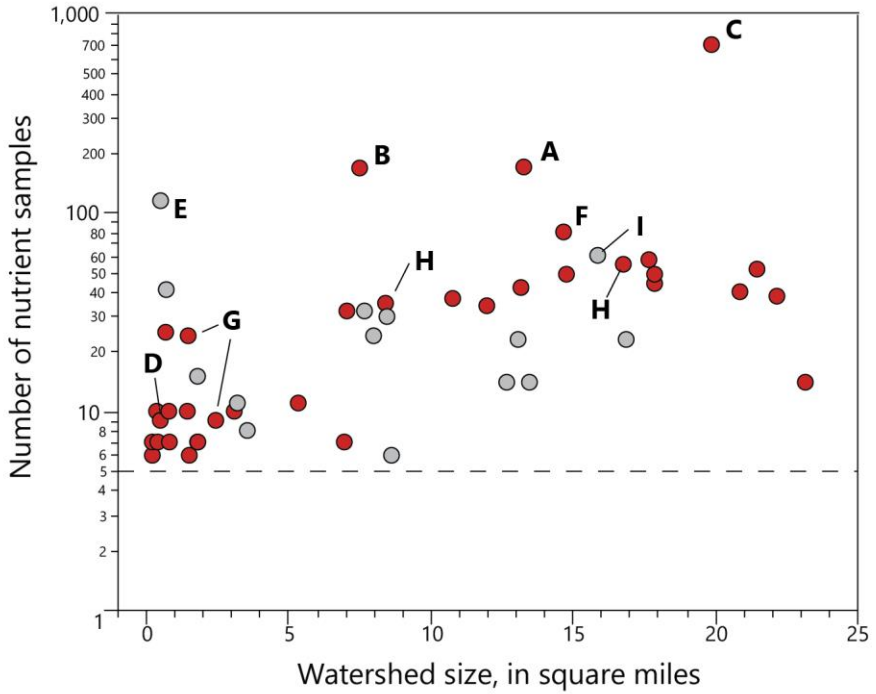

Sewell Branch
nr Peacock
Corners, DE
Upper
Chester
River
Crumpton
300
White Marsh
Branch nr
Greensboro, DE
Centreville
Jarmans
Branch nr
Oakland, MD
Federalsburg
113
Harriet Tubman
Underground

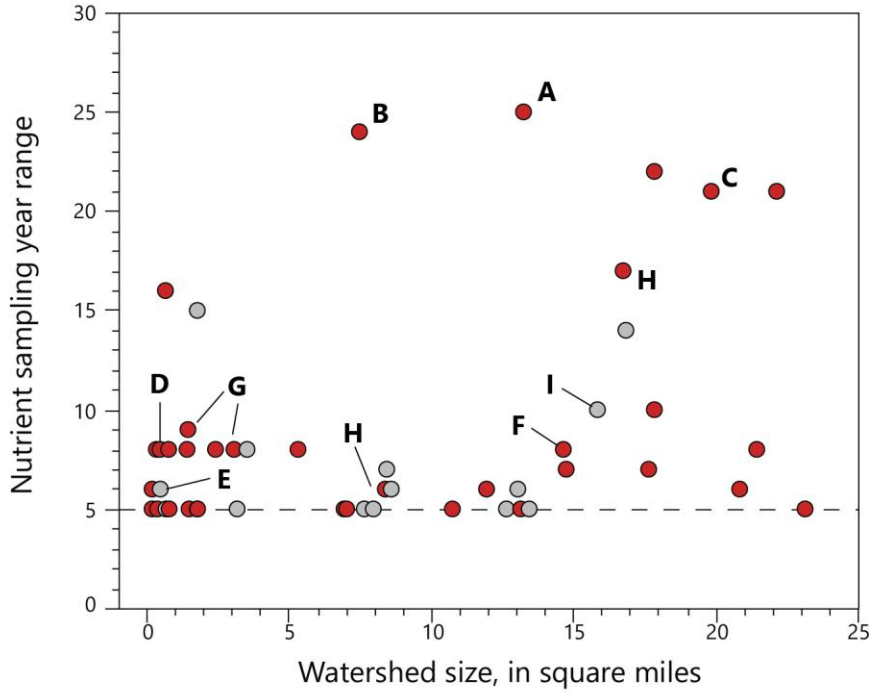

New Market
War
Branch
Harrisonburg
Shenandoah
National Park
Staunton
33
81
64
42
29
151
340
40


Leesburg
Middleburg
Cromwell's
Run
7
15
17


Factory Brook at
Homer, NY
Cedar Run nr Cedar
Springs, PA

Number of samples and years of sampling by watershed size





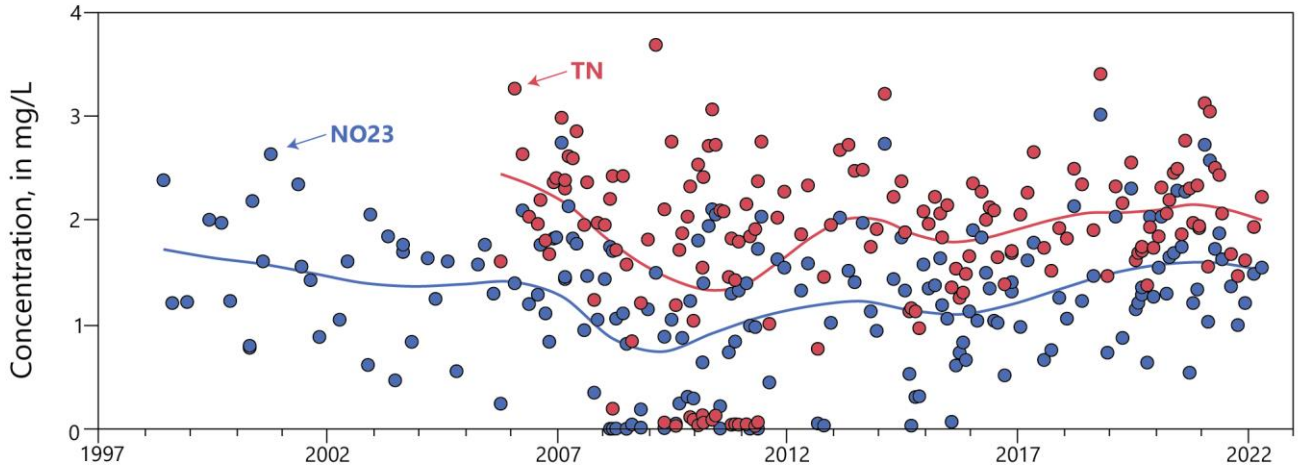
A. Sewell Branch nr Peacock Corners, DE
B. White Marsh Branch nr Greensboro, DE
C. Jarmans Branch nr Oakland, MD
D. Upper Chester River Stations (n=6)
E. Bald Eagle Creek nr Fawn Grove, PA
F. Cedar Run nr Cedar Springs, PA
G. War Branch Tributaries (n=2)
H. Cromwell's Run (n=2)
I. Factory Brook at Homer, NY

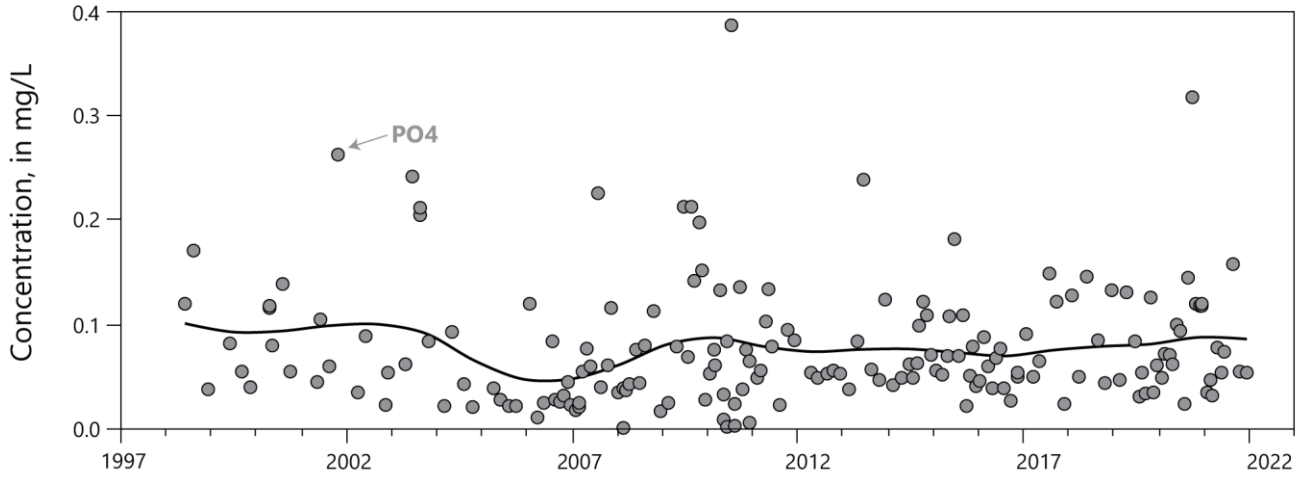
Most recent sample date
2012 or later
pre-2012

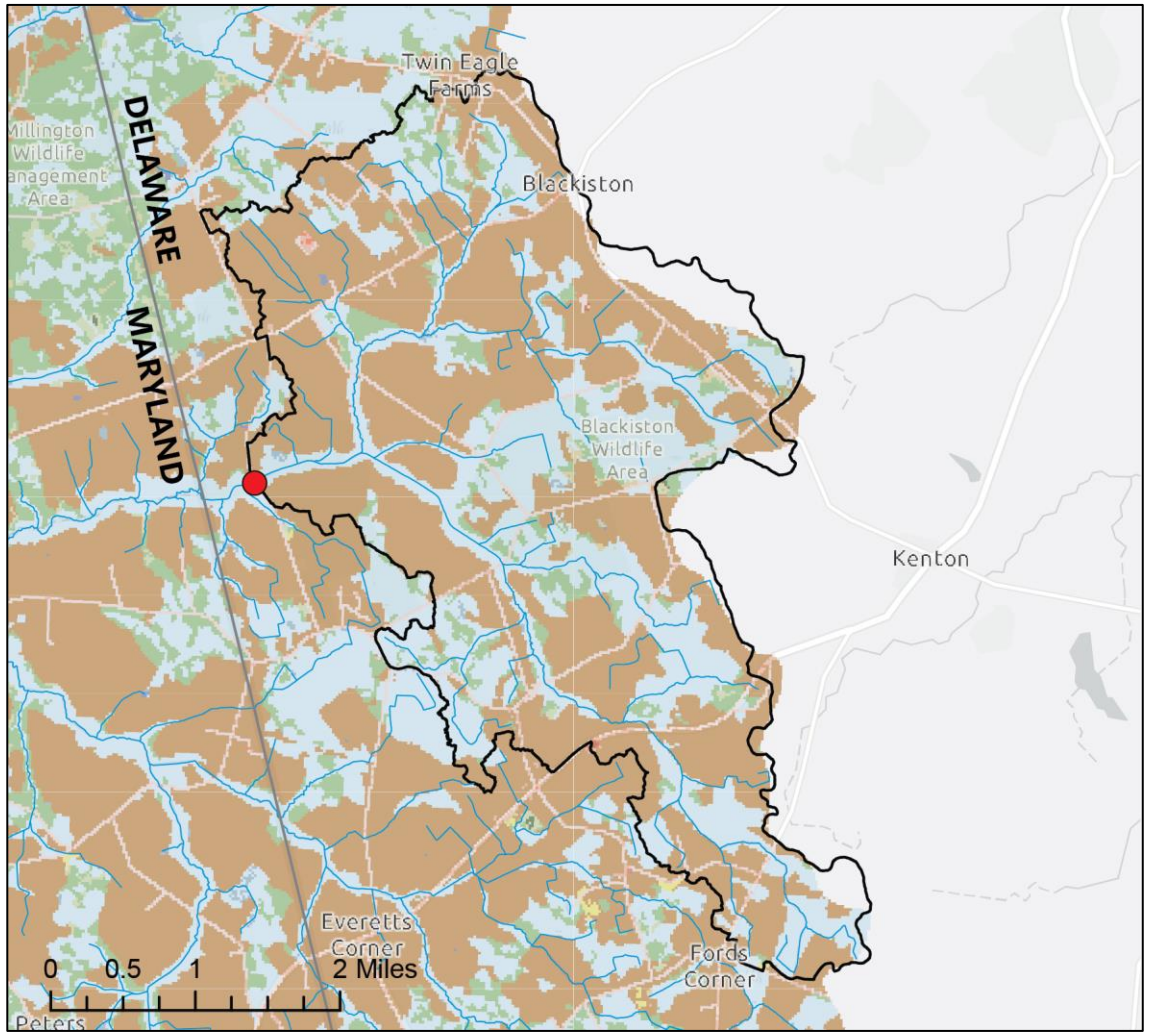
Sewell Branch nr Peacock Corners, DE

38.978978, -75.725678

Drainage Area: 13 mi^2 **Collecting Agency:** DENREC **Land Use:** 51% ag, 6% urban



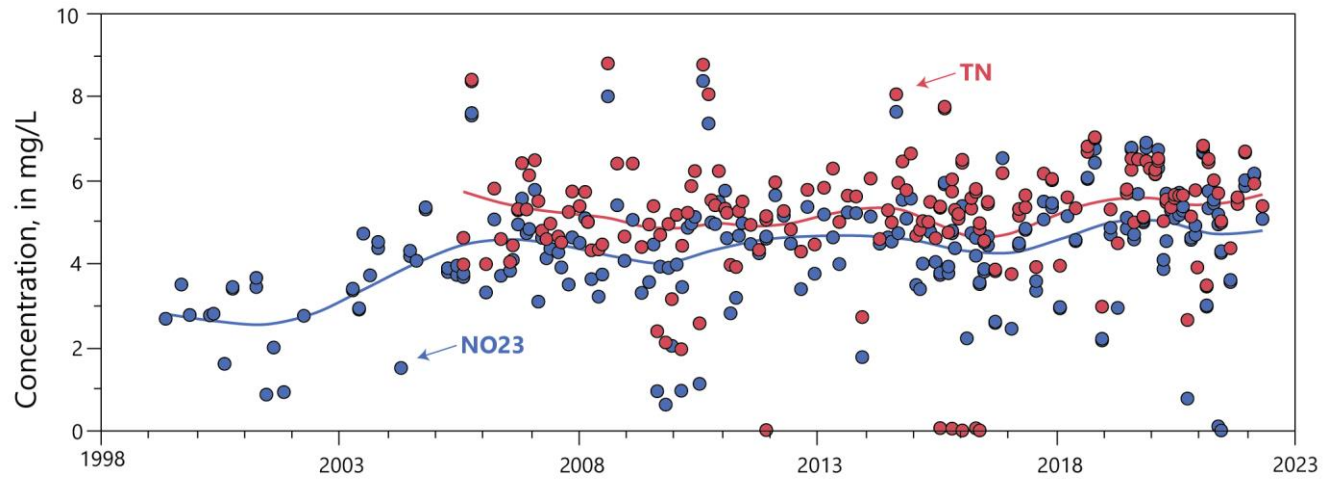


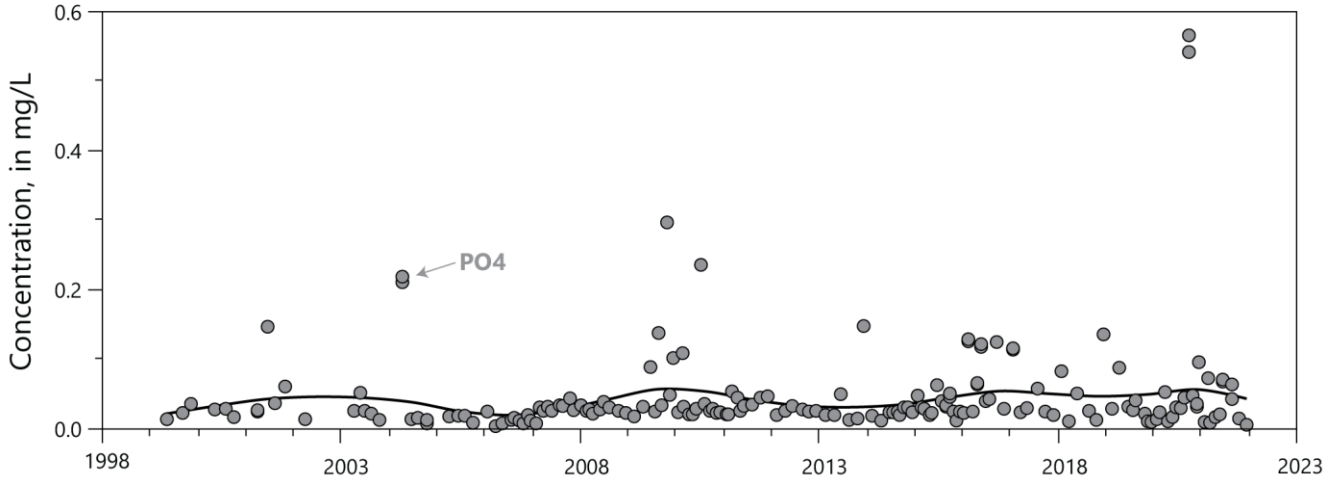


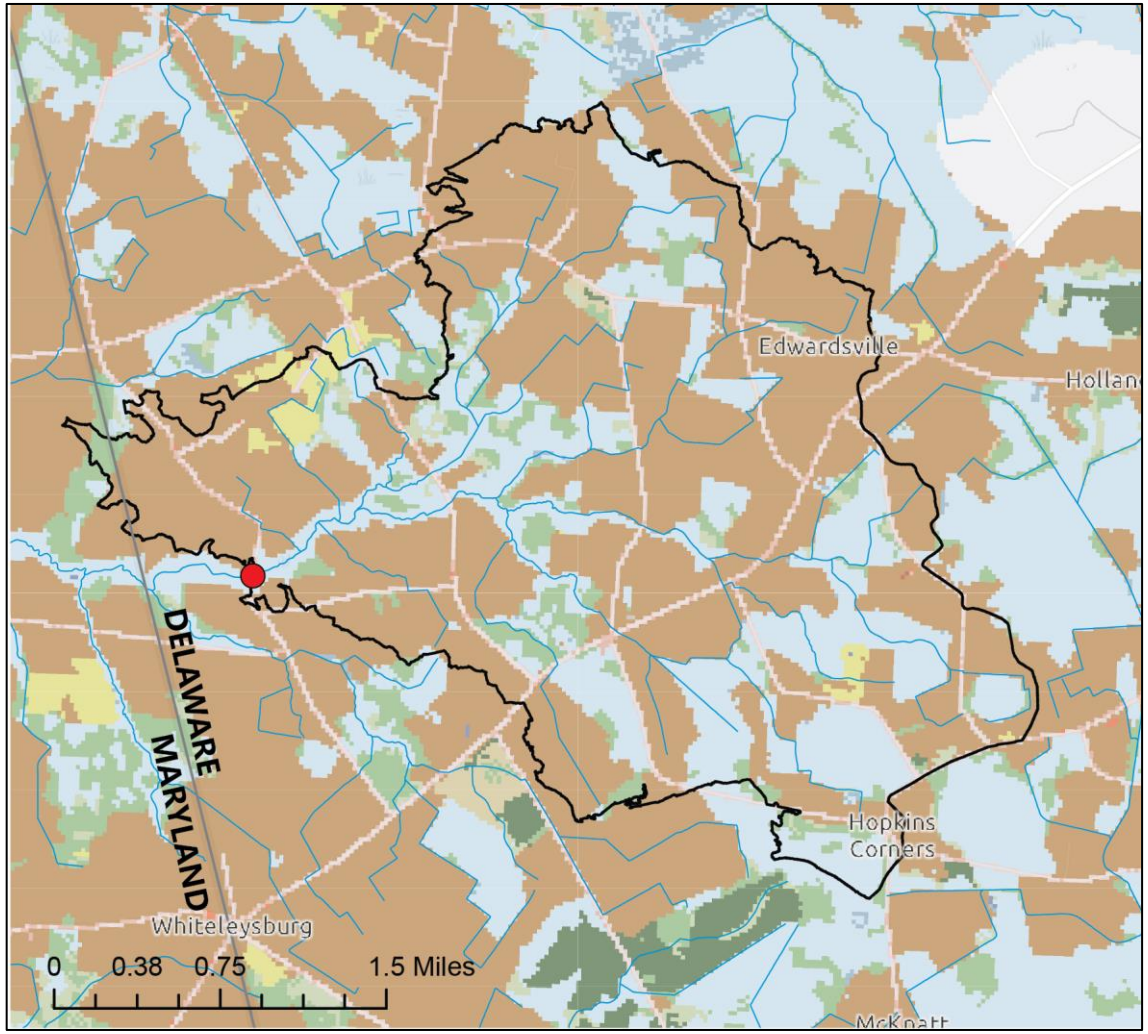
White Marsh Branch nr Greensboro, DE

38.978978, -75.725678

Drainage Area: 7.4 mi^2 **Collecting Agency:** DENREC **Land Use:** 61% ag, 6% urban



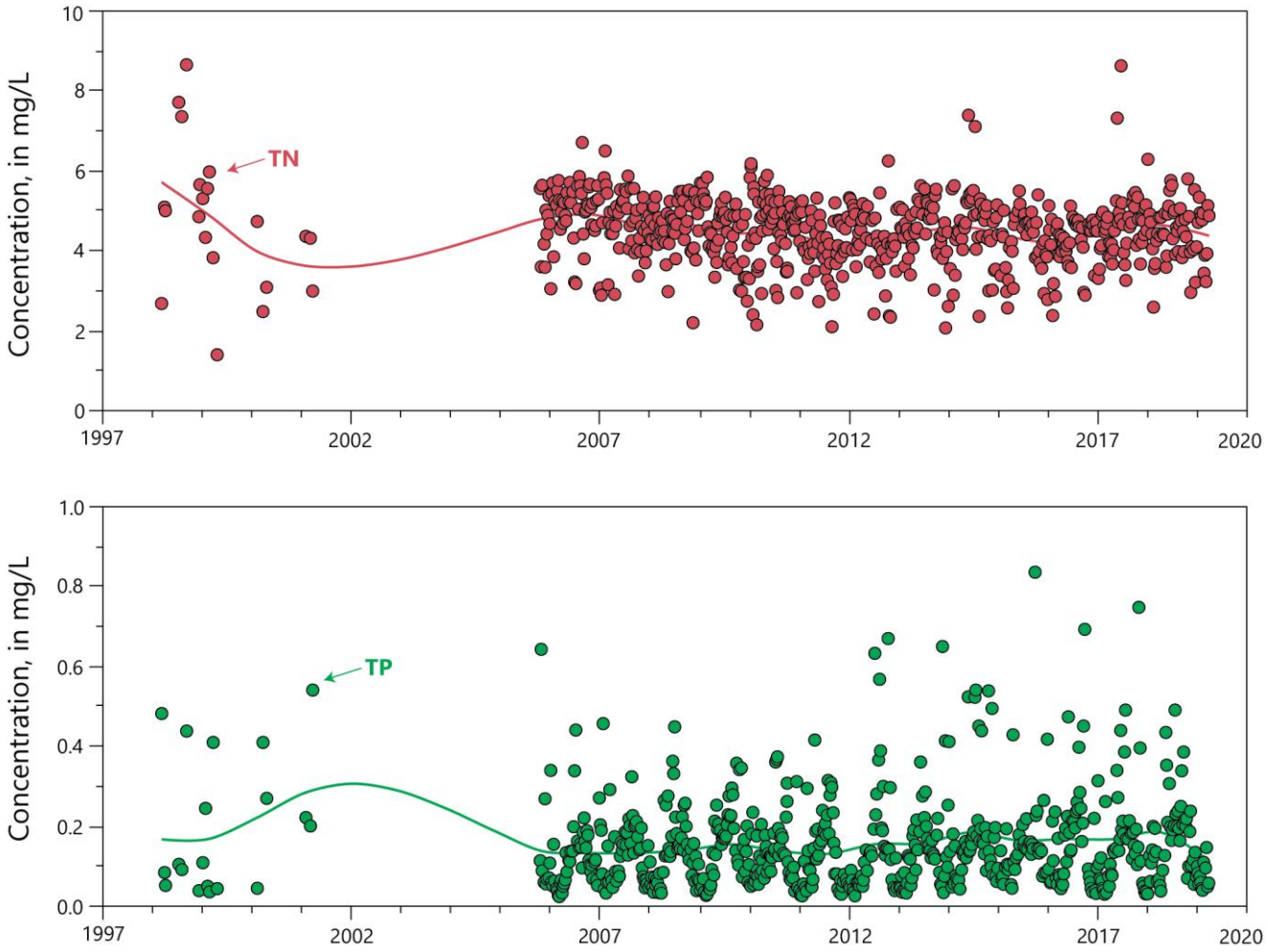


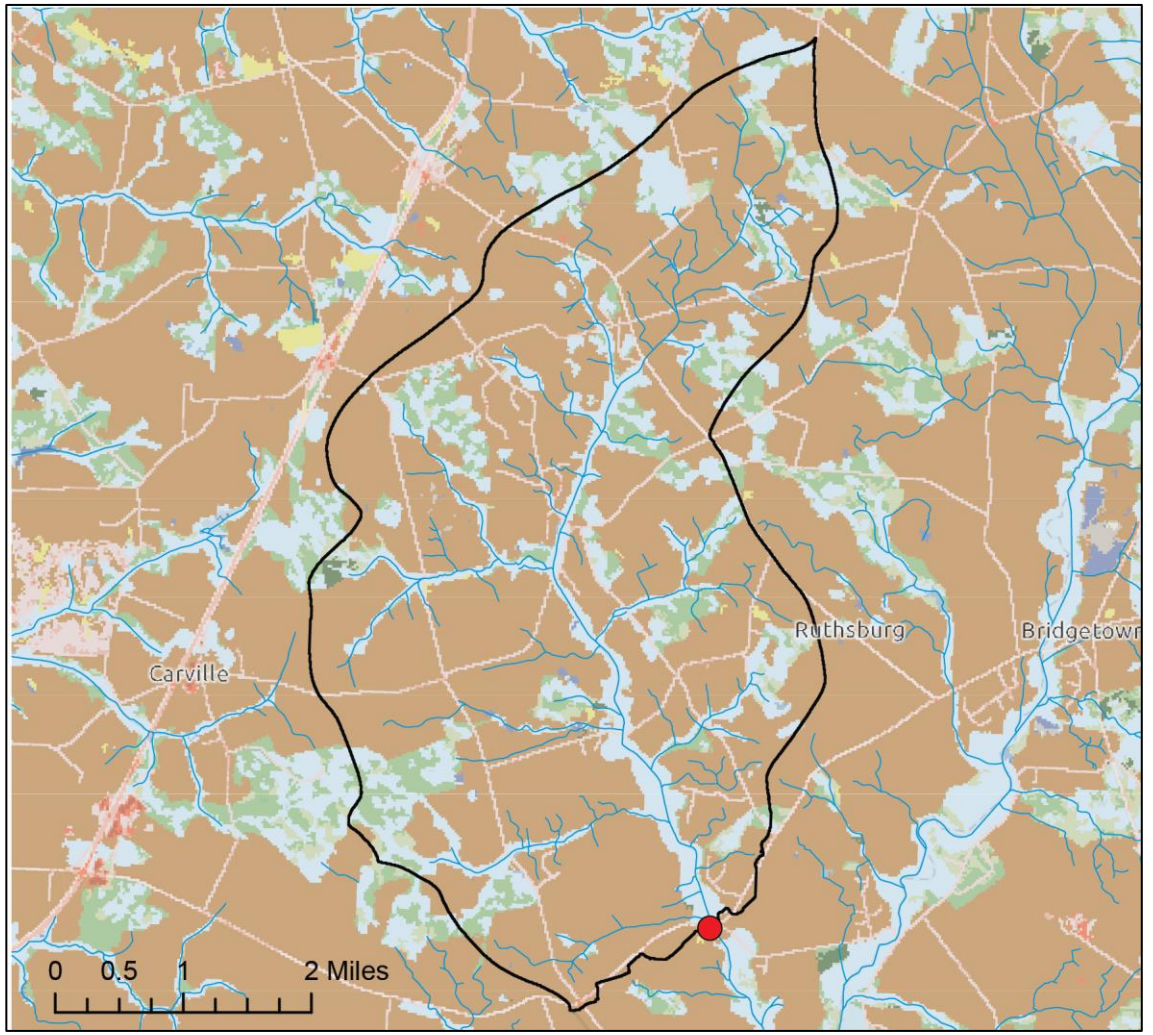


Jarmans Branch nr Oakland, MD

39.00906, -75.93748

Drainage Area: 20 mi^2 **Collecting Agency:** MDE **Land Use:** 67% ag, 6% urban

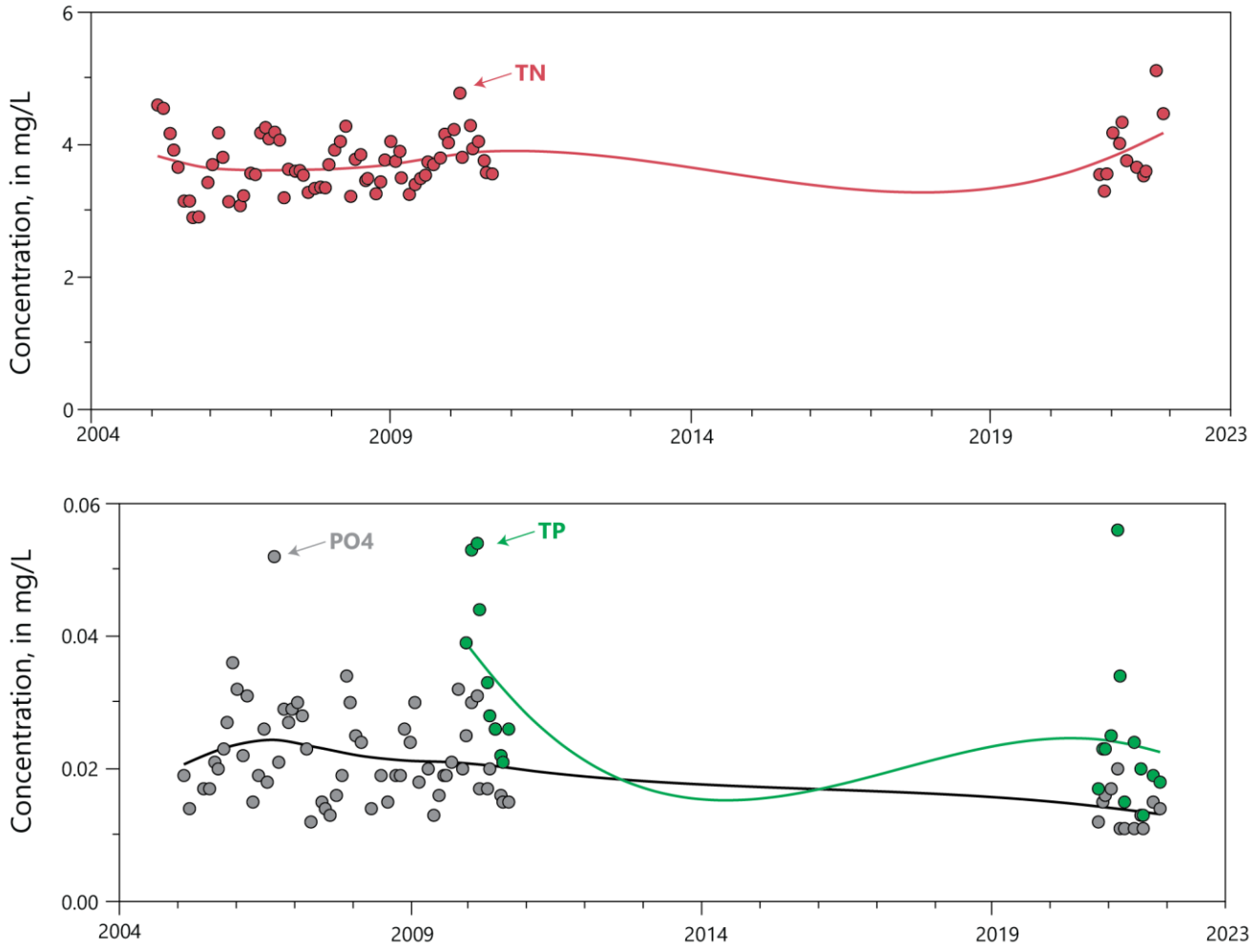


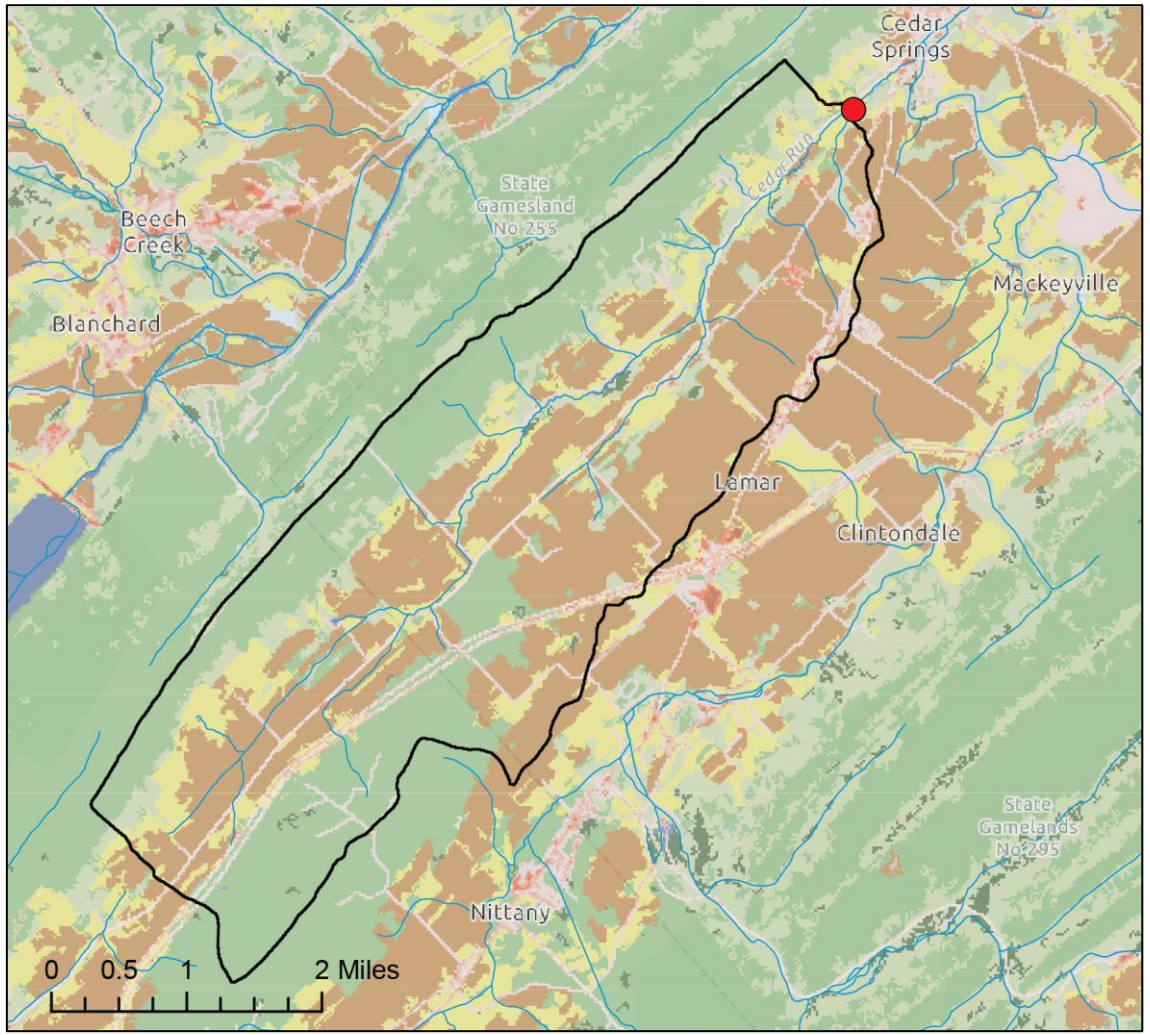


Cedar Run nr Cedar Springs, PA

41.0761, -77.4897

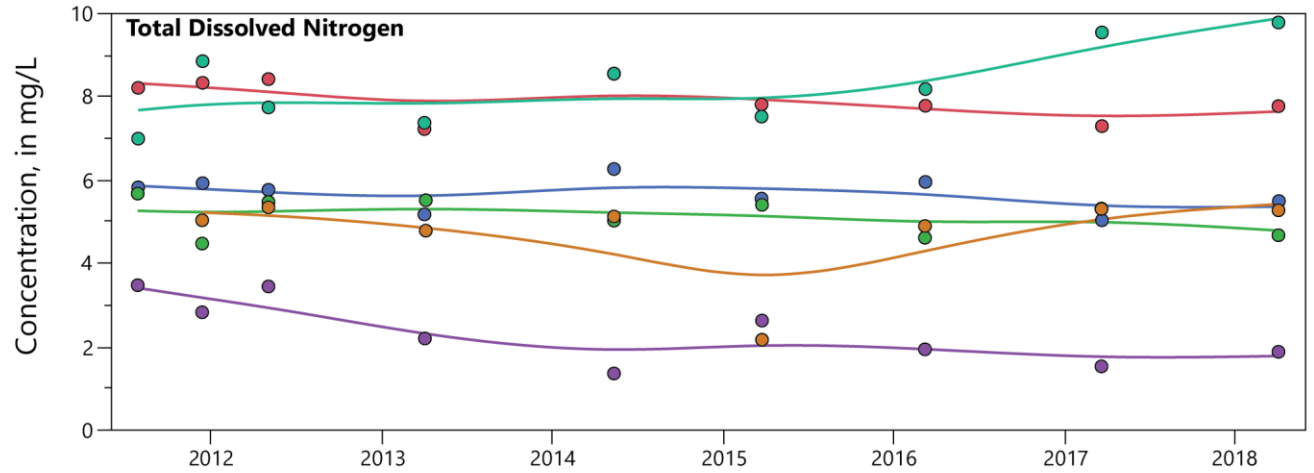
Drainage Area: 15 mi^2 **Collecting Agency:** PADEP **Land Use:** 55% ag, 7% urban

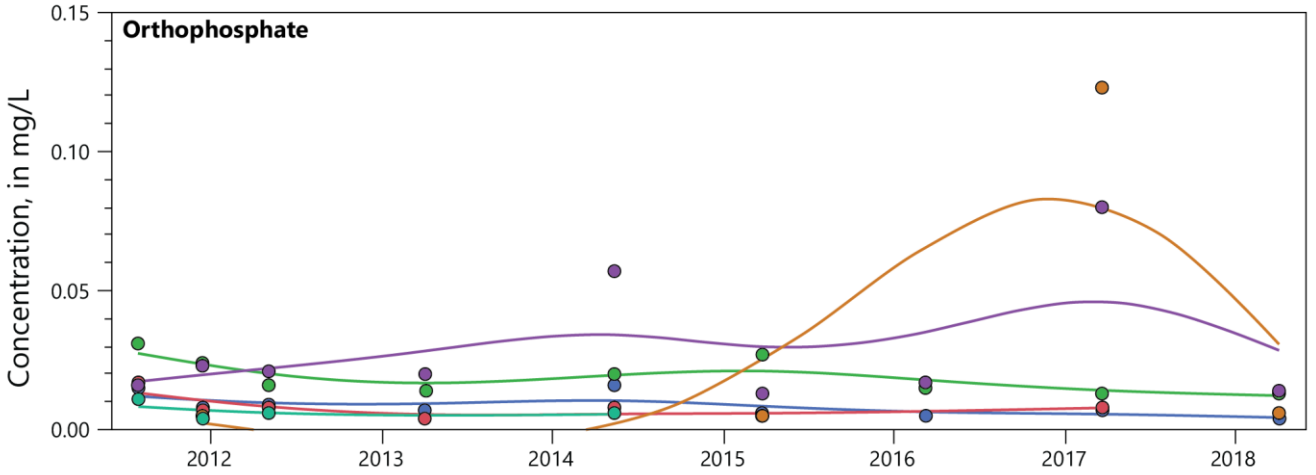


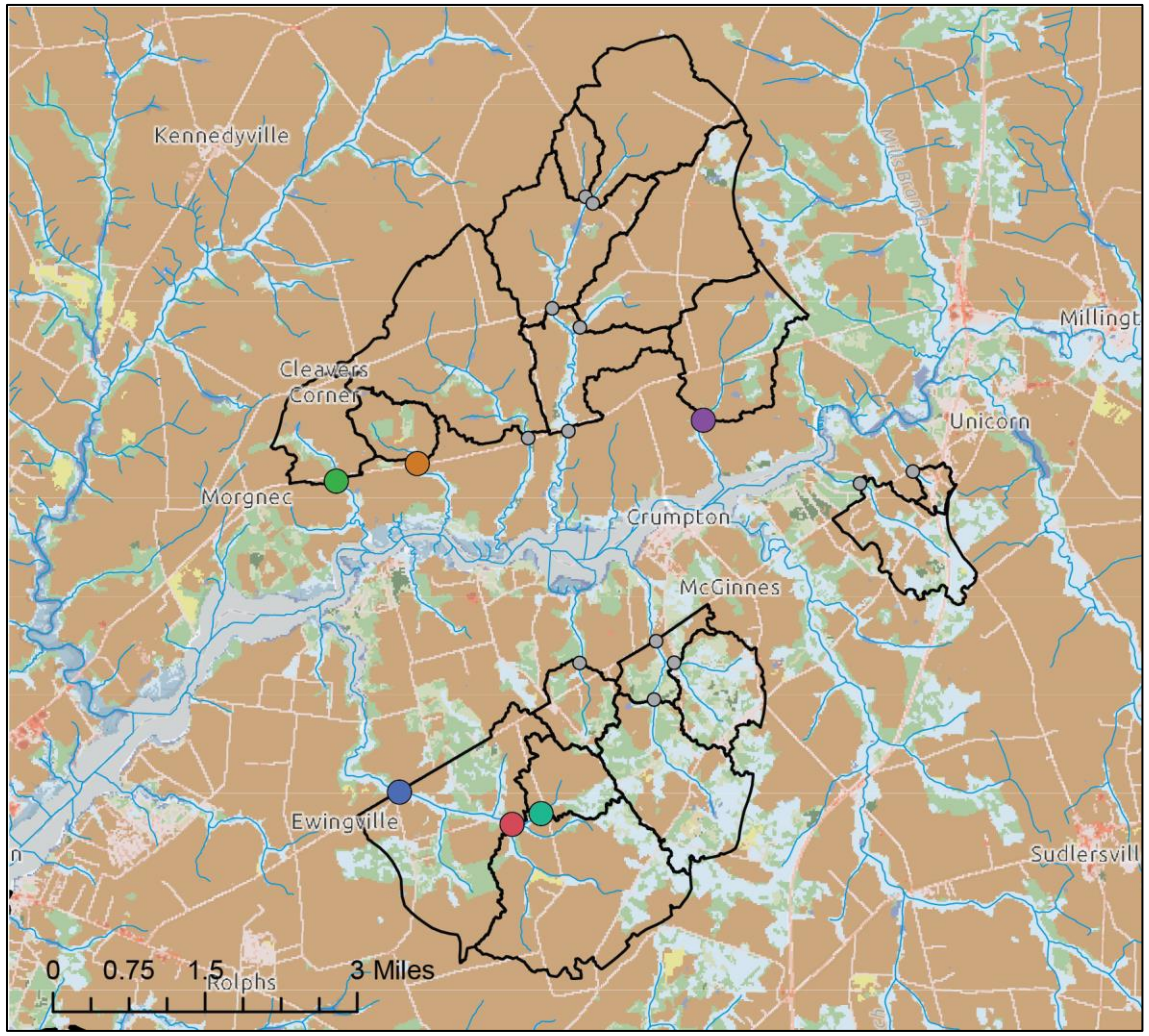


Upper Chester River Watershed Stations

Drainage Area: 0.3 to 5.0 mi^2 **Collecting Agency:** USGS **Land Use:** 68 to 87% ag, 0.4 to 6.0% urban







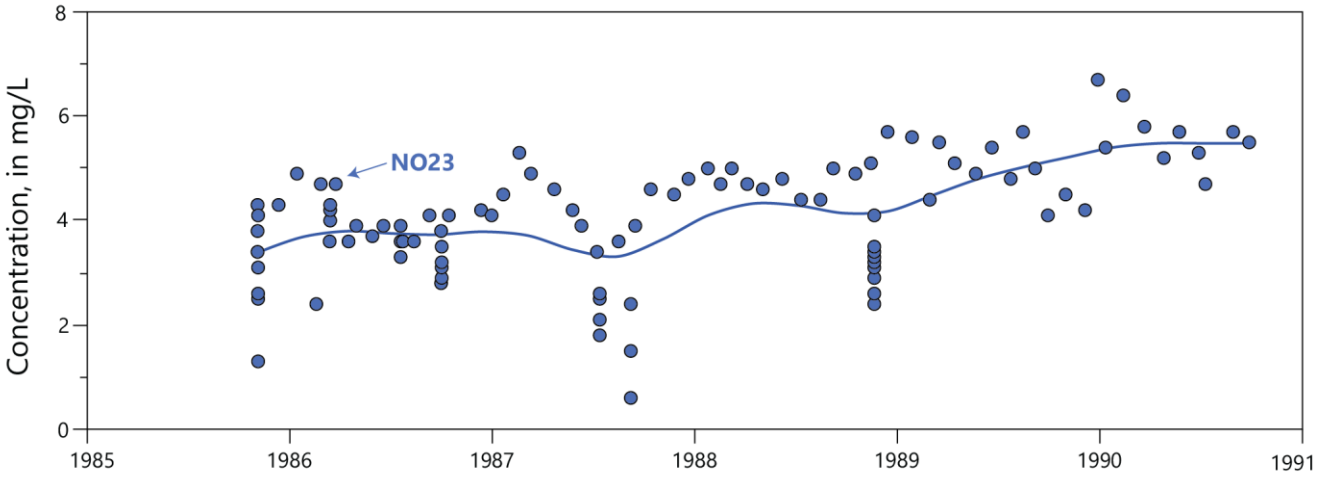
Bald Eagle Creek nr Fawn Grove, PA

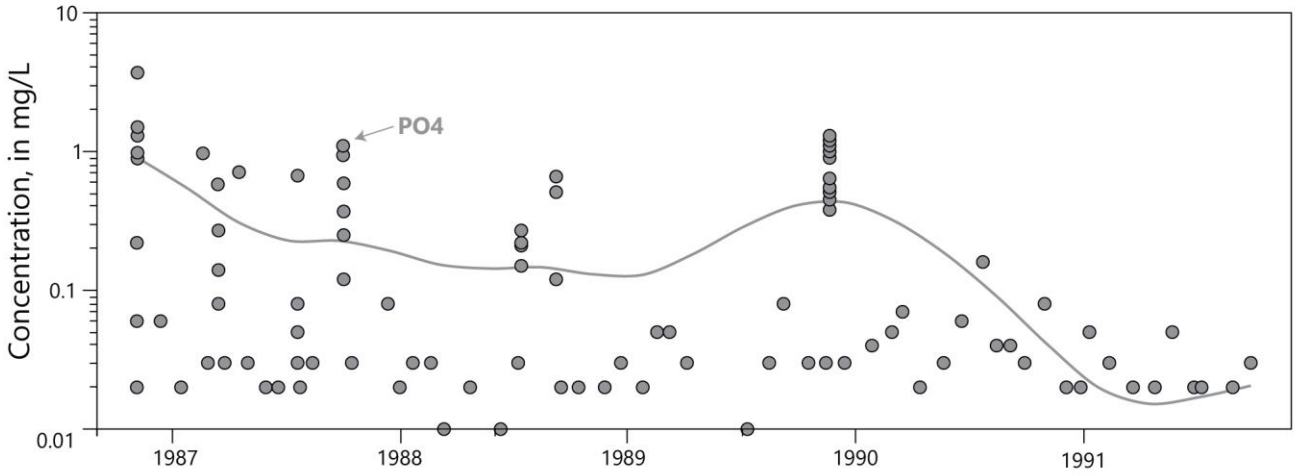
39.748437, -76.463575

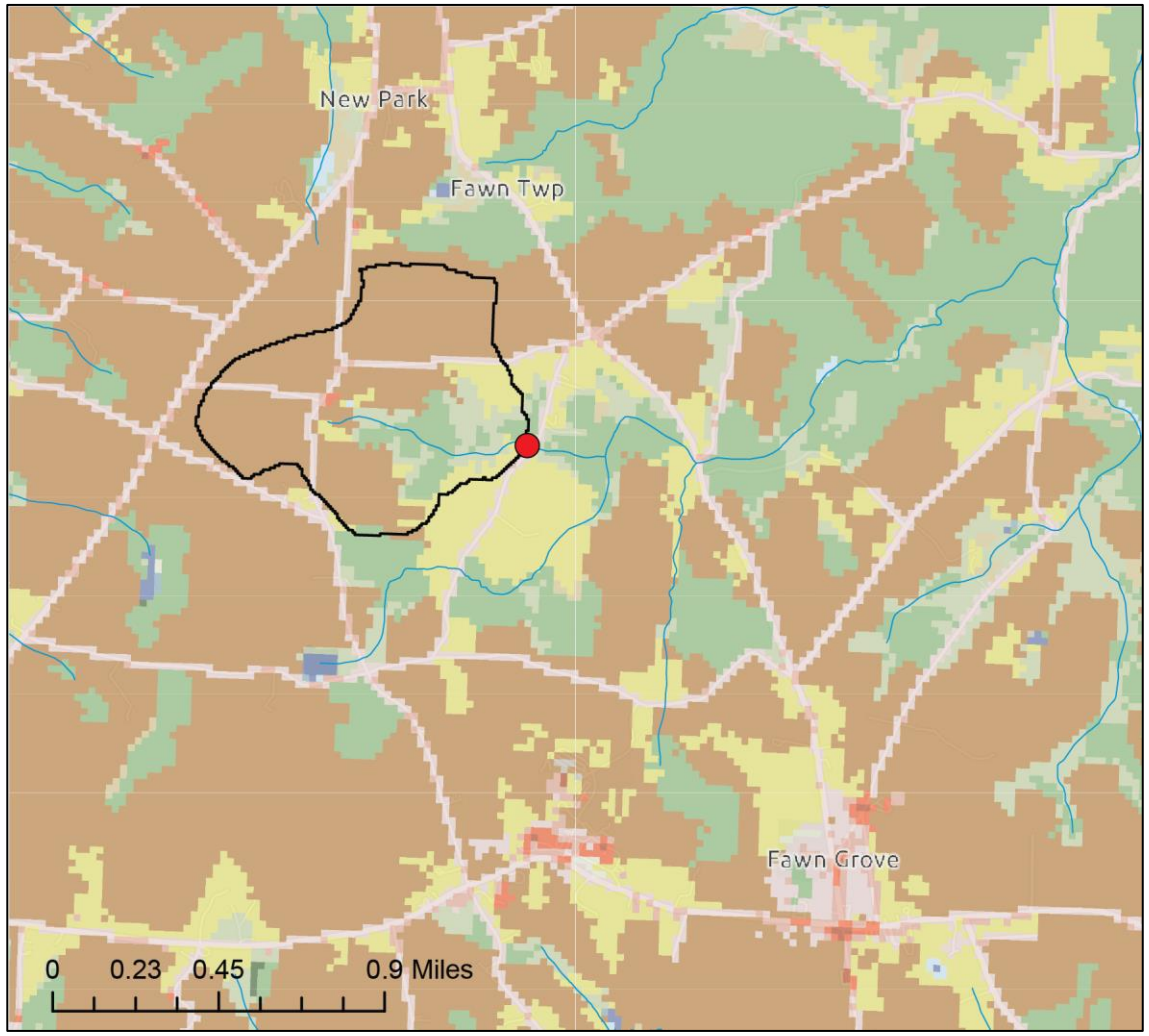
Drainage Area: 0.4 mi^2

Collecting Agency: USGS

Land Use: 82% ag, 8% urban

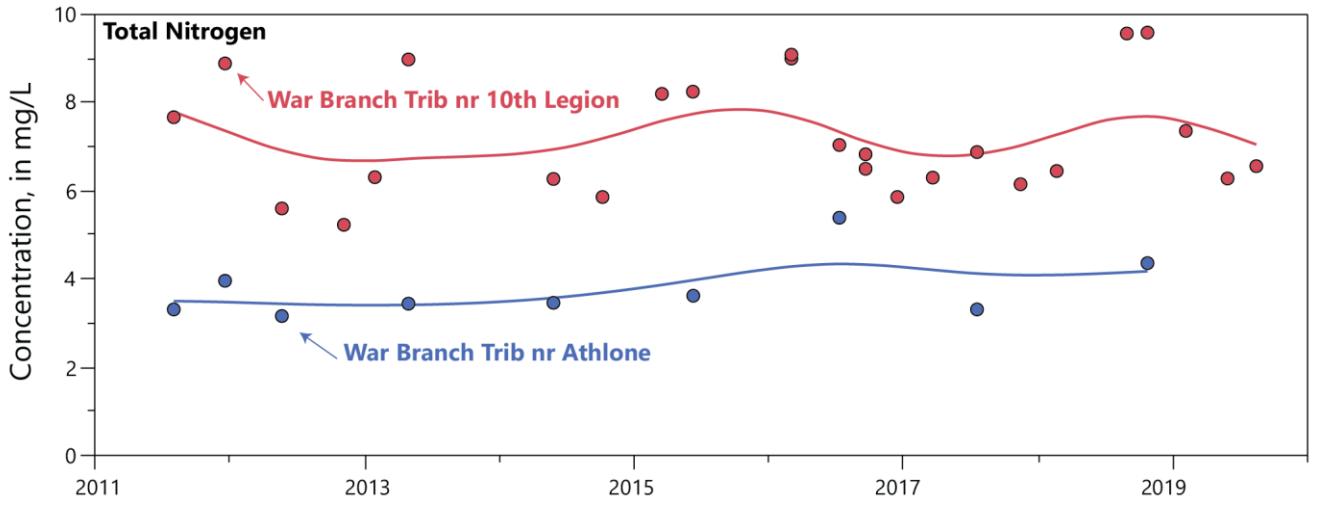


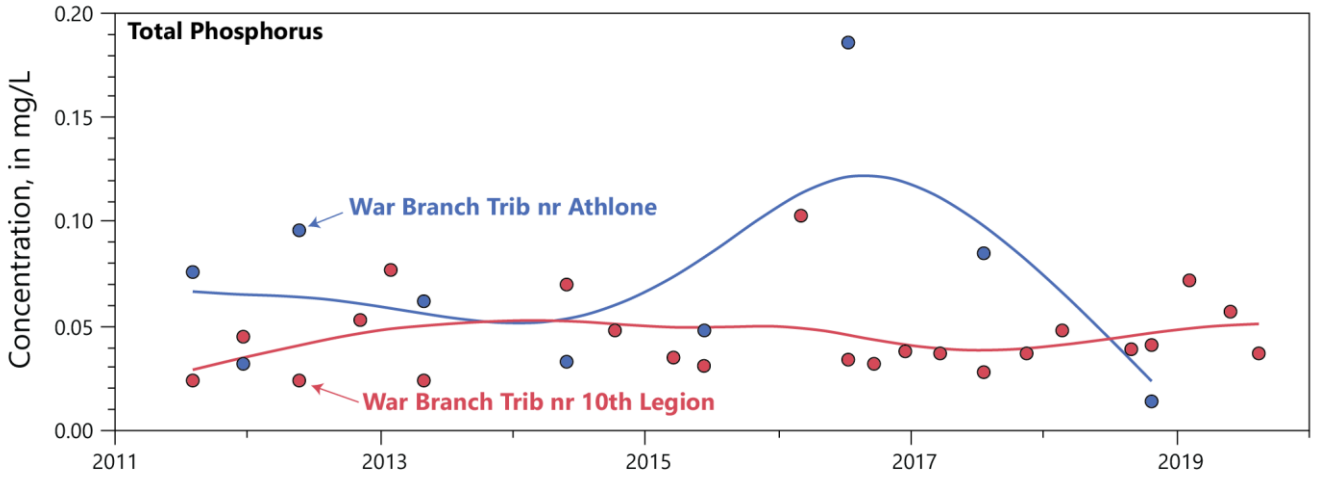


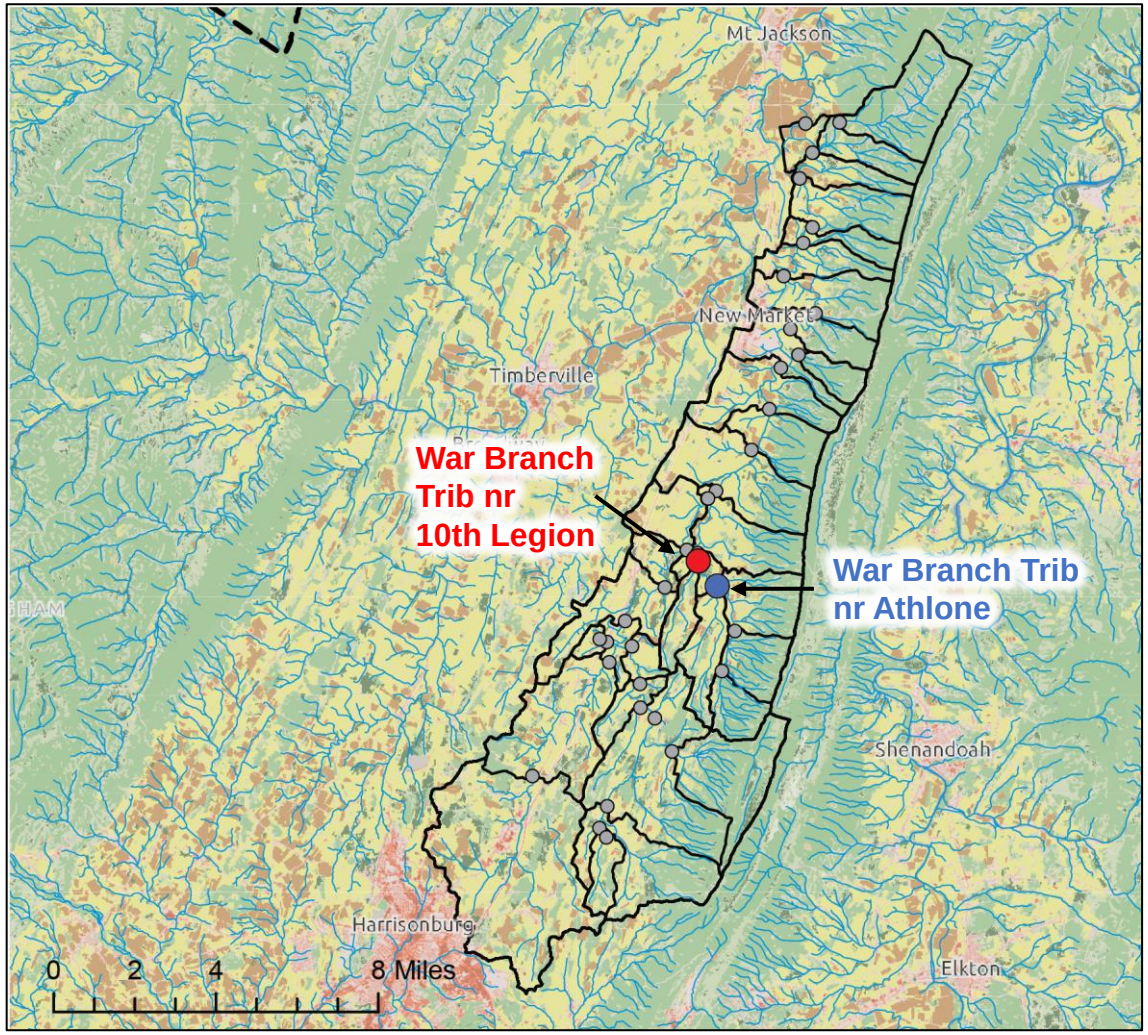


War Branch Tributaries

Drainage Area: 1.4 / 2.4 mi^2 **Collecting Agency:** USGS **Land Use:** 67 / 70% ag, 6 / 4 % urban



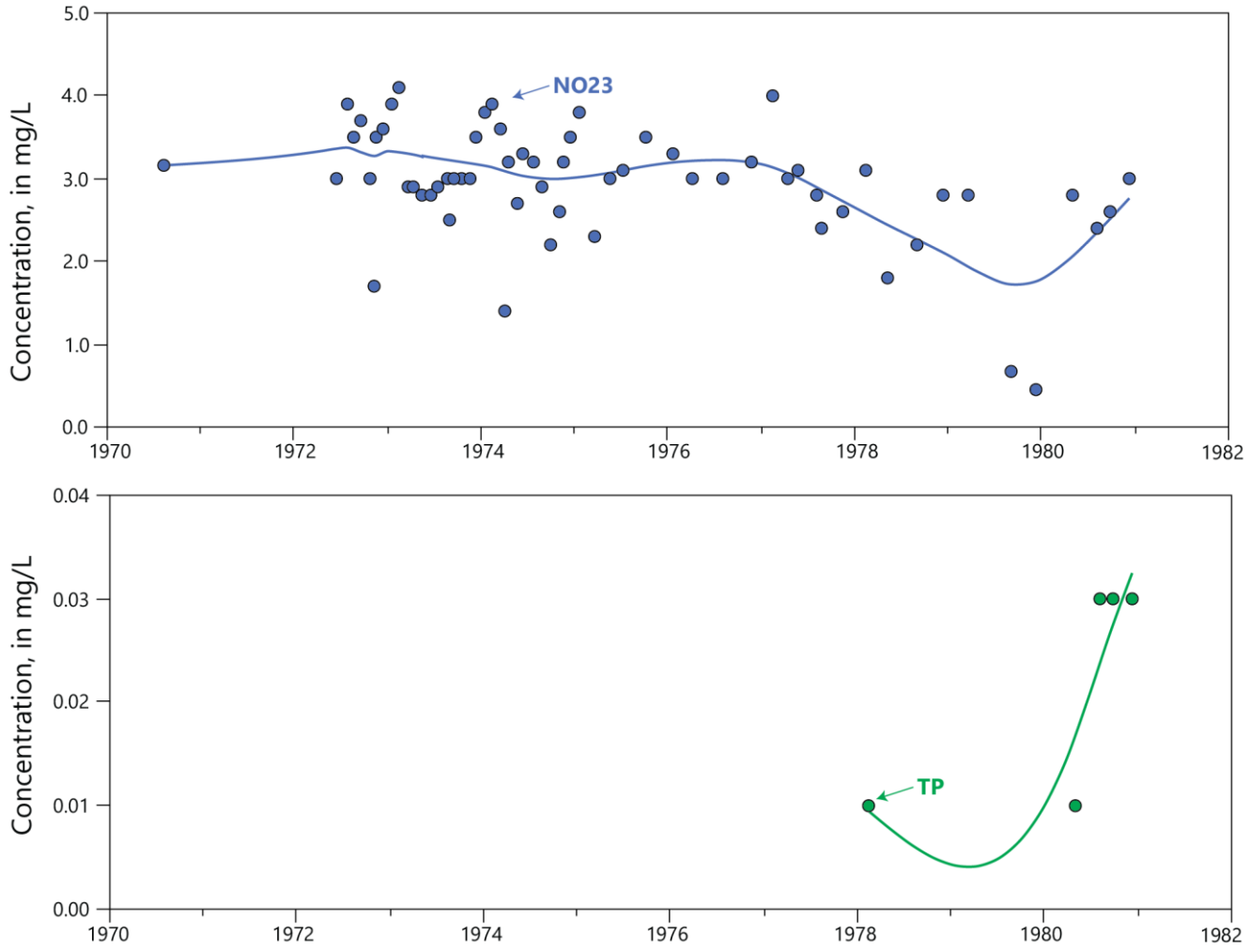


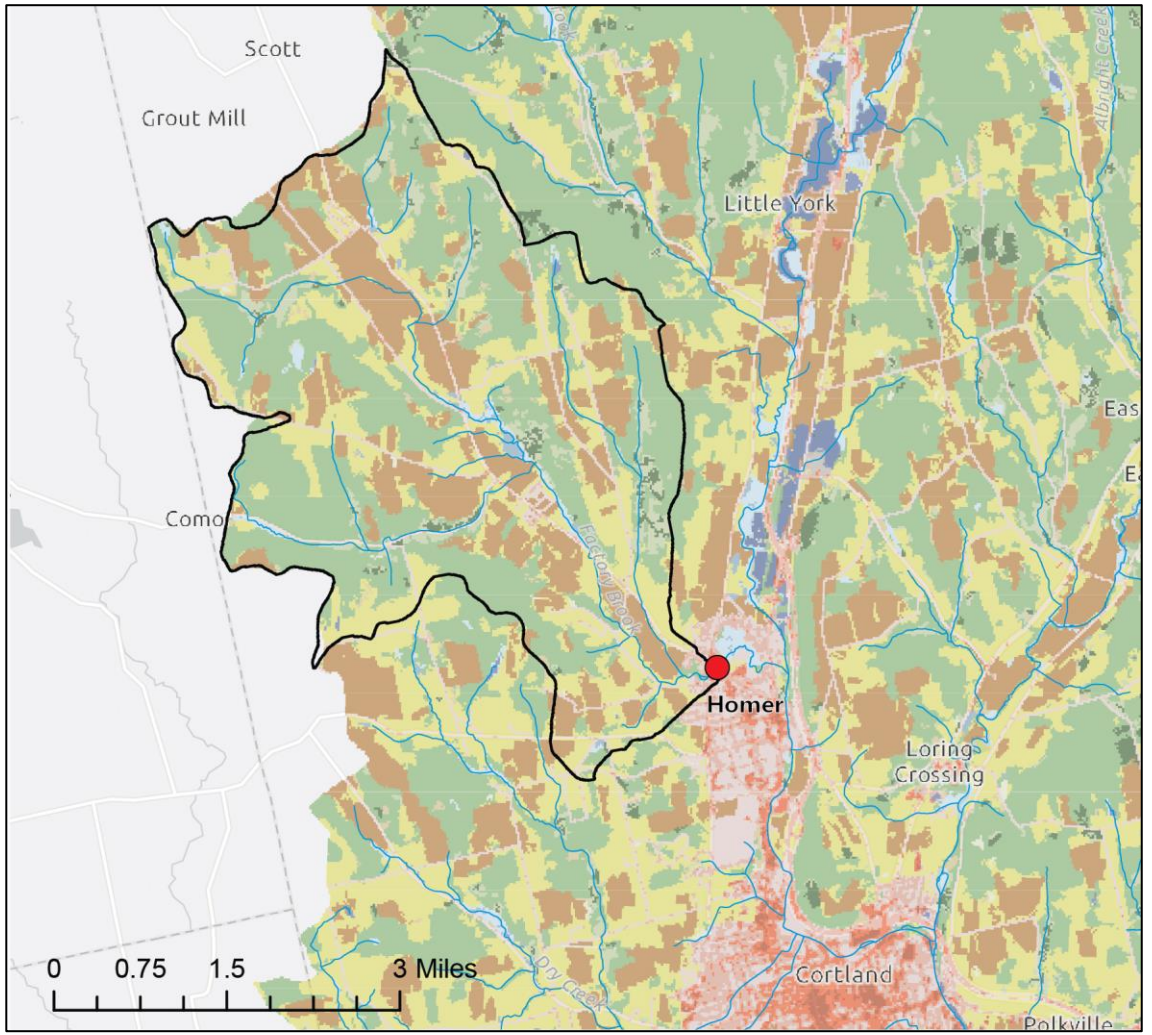


Factory Brook at Homer, NY

42.644167, -76.186944

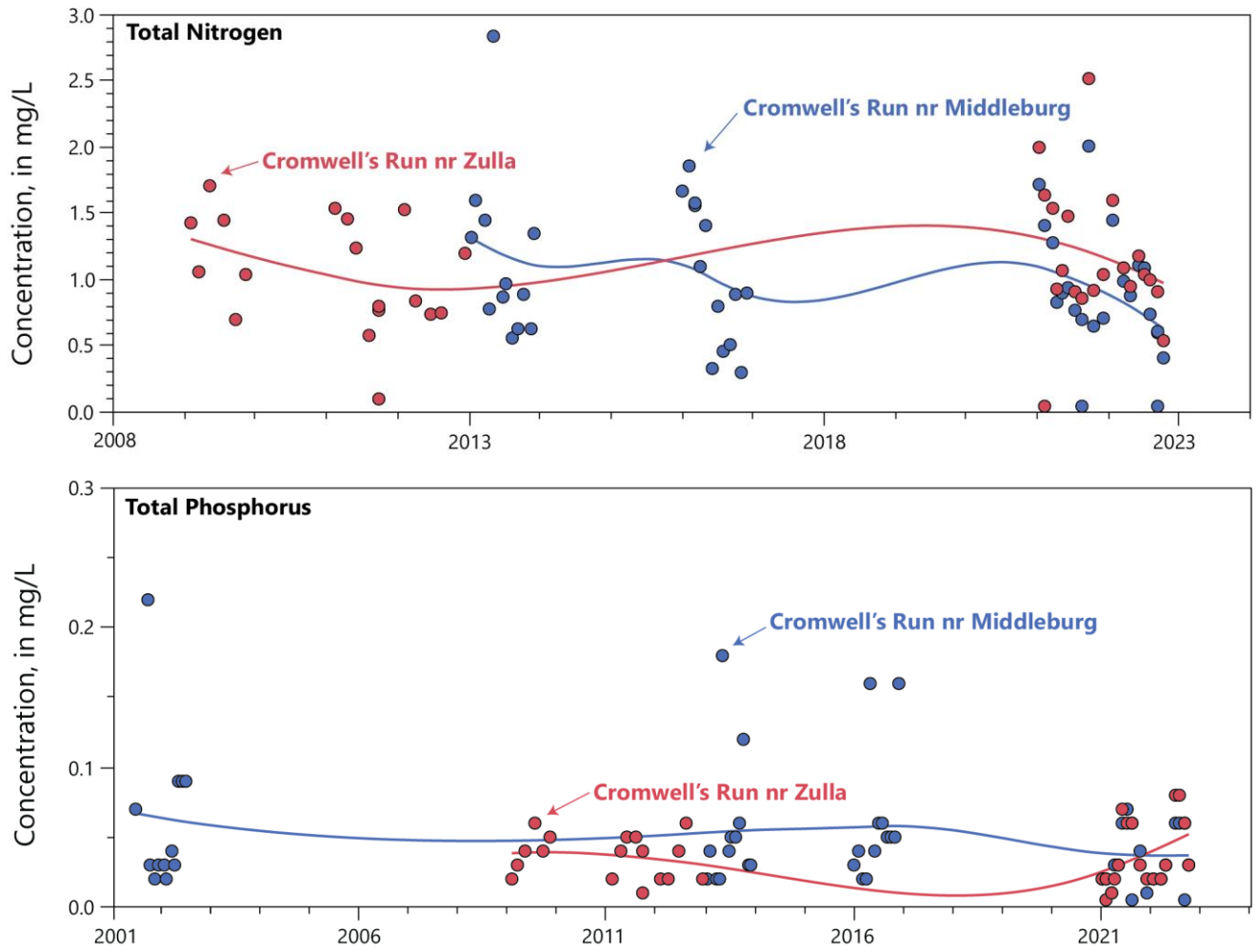
Drainage Area: 16 mi^2 **Collecting Agency:** USGS **Land Use:** 51% ag, 5% urban

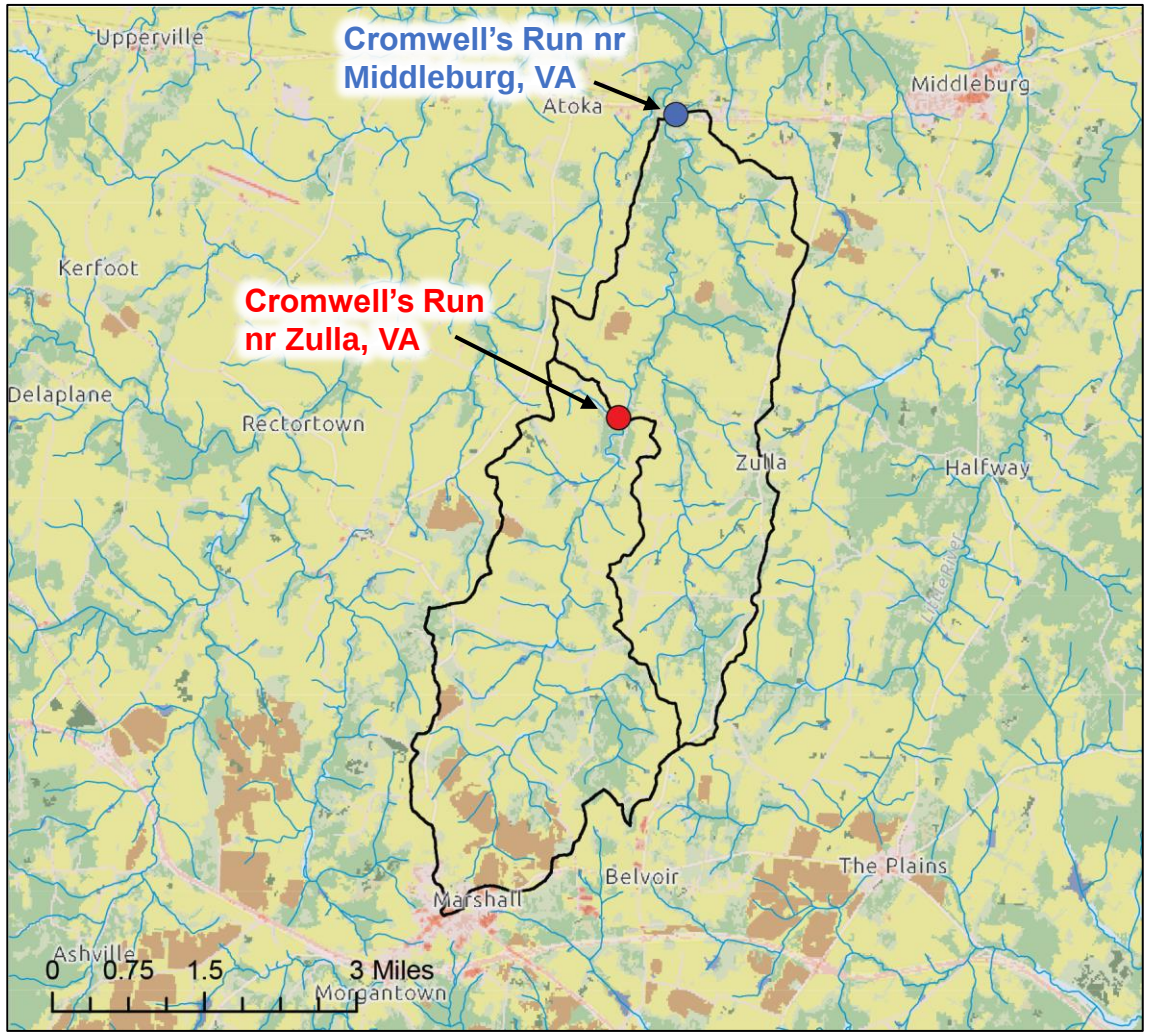




Cromwell's Run Stations

Drainage Area: 8 / 17 mi^2 **Collecting Agency:** VADEQ **Land Use:** 74 / 67% ag, 6 / 4% urban





Summary

These selections met the criteria of water quality monitoring sites that are in small watersheds, have high ag/low urban development, and have nutrient data archived.

Watershed sizes ranged from 0.3 to 20 square miles.

All sampling data was compiled for the 49 selected sites into an excel file.

The sites shown in the presentation today do not have to be the final recommendations, but suggestions to use as a tool to develop the final sites for the Partnership Network.

Questions and feedback

Questions or comments about the analysis process? Please leave your feedback below.

https://forms.microsoft.com/g/iGUujMwqV7