

# Stream Work Makes the Dream Work: Volunteer Monitoring in the Susquehanna River Watershed

Isabel Ruff

NY Watershed Forum

October 18, 2023



# Agenda

- Introduction
  - ALLARM
  - Chesapeake Monitoring Cooperative
  - Stream Team
- The Stream Team Volunteer Experience
- Q & A

# Alliance for Aquatic Resource Monitoring

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Founded in 1986, ALLARM builds the capacity of communities to use science as a tool to investigate the health of their streams and to use those data for local change.

[www.dickinson.edu/allarm](http://www.dickinson.edu/allarm)



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# ALLARM Continued...

## Professional Staff:

Phoebe Galione  
Isabel Ruff  
Lindsay VanFossen  
Julie Vastine  
Jinnie Monismith  
Dr. Candie Wilderman  
(ALLARM Founder)

- 10-14 Dickinson College Students
- Community Science Center at Dickinson College
- 30% supported by the college, 70% funded by federal, state, family foundation grants



# ALLARM Services

- Study design
- Biological, chemical, visual monitoring
- Quality assurance/Quality control
- Data management
- Data communication



# Chesapeake Monitoring Cooperative

A partnership that aims to connect water quality monitoring initiatives across the region in order to amplify voices and enhance our understanding of the Chesapeake Bay Watershed. The CMC envisions a Chesapeake community where all data of documented quality are used to inform watershed management decisions and restoration efforts.

## Cooperative Agreement



**CMC**  
Chesapeake Monitoring  
Cooperative

## CMC development team partners & service providers



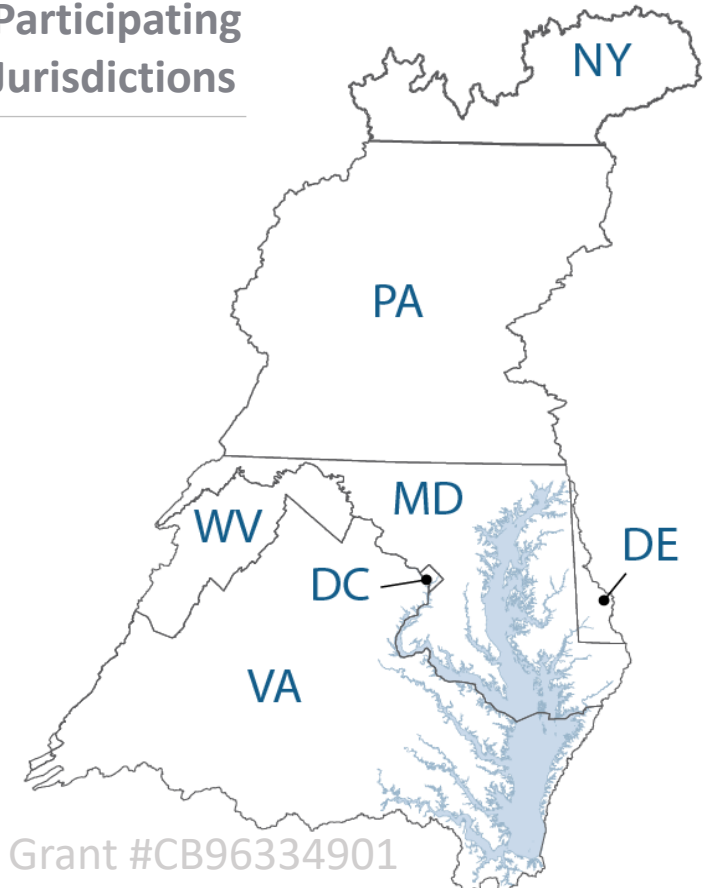
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University of Maryland  
CENTER FOR ENVIRONMENTAL SCIENCE



## Participating Jurisdictions



USEPA Grant #CB96334901

# CMC Chesapeake Data Explorer

**824,000+** Data points

**3,200+** stations

**7** Bay jurisdictions

**135+** Organizations

<https://www.cmc.vims.edu>

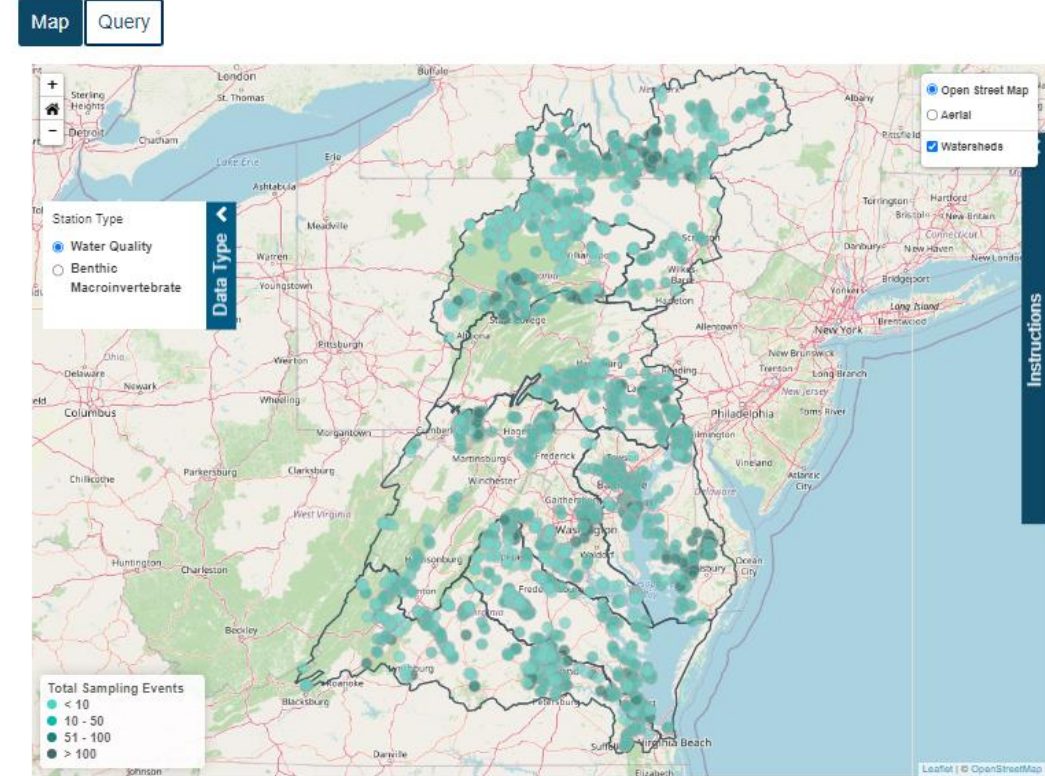
## Welcome to the Chesapeake Data Explorer!

The Chesapeake Data Explorer is a tool for storing and sharing data collected by a network of water quality and benthic macroinvertebrate monitors working with the [Chesapeake Monitoring Cooperative](#). These data are publicly accessible and are shared directly with the Chesapeake Bay Program and other data users.

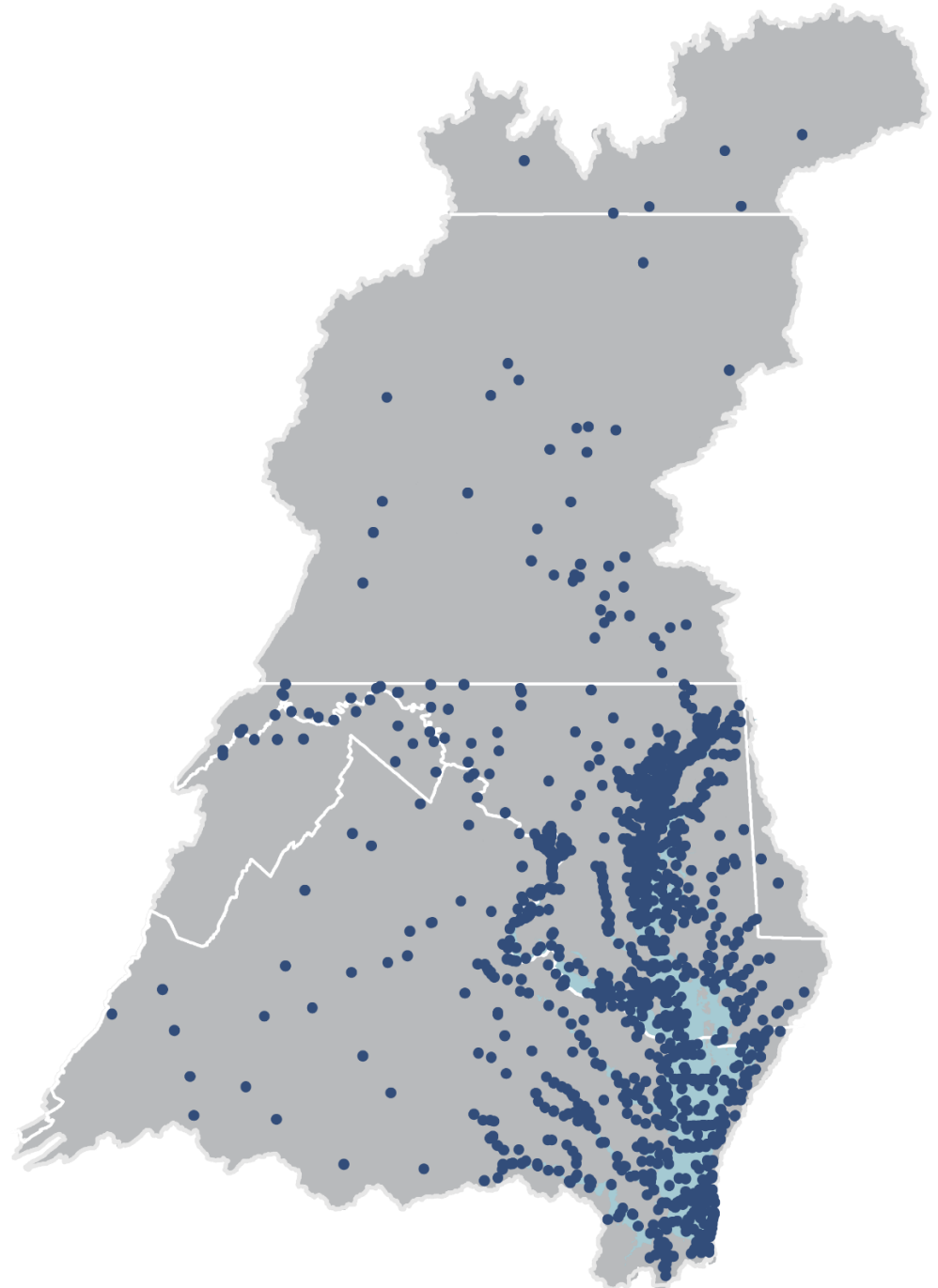
Data are identified by method and quality assurance level using the [CMC tiered framework](#) and are owned by the data provider(s) and not the Chesapeake Monitoring Cooperative. Data users are:

- Responsible for [properly citing](#) the original data provider. Contact information for data providers can be found [HERE](#).
- Responsible for using provided data in a manner consistent to the quality assurance of the provided data.

Use the Map tab to view Water Quality or Benthic Macroinvertebrate data throughout the watershed. Use the Query tab to download data and metadata files.

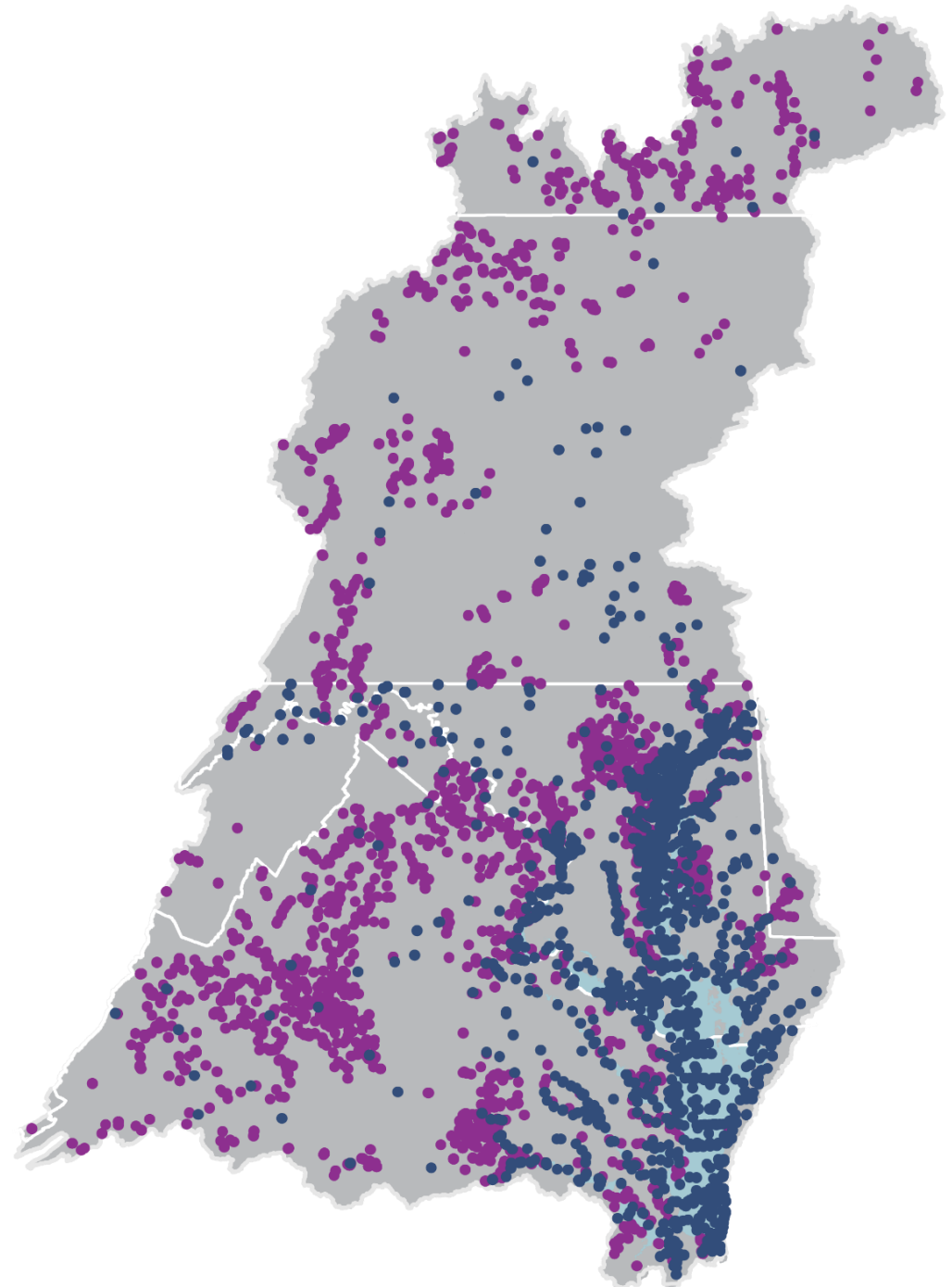


# Chesapeake Bay Program Monitoring Sites



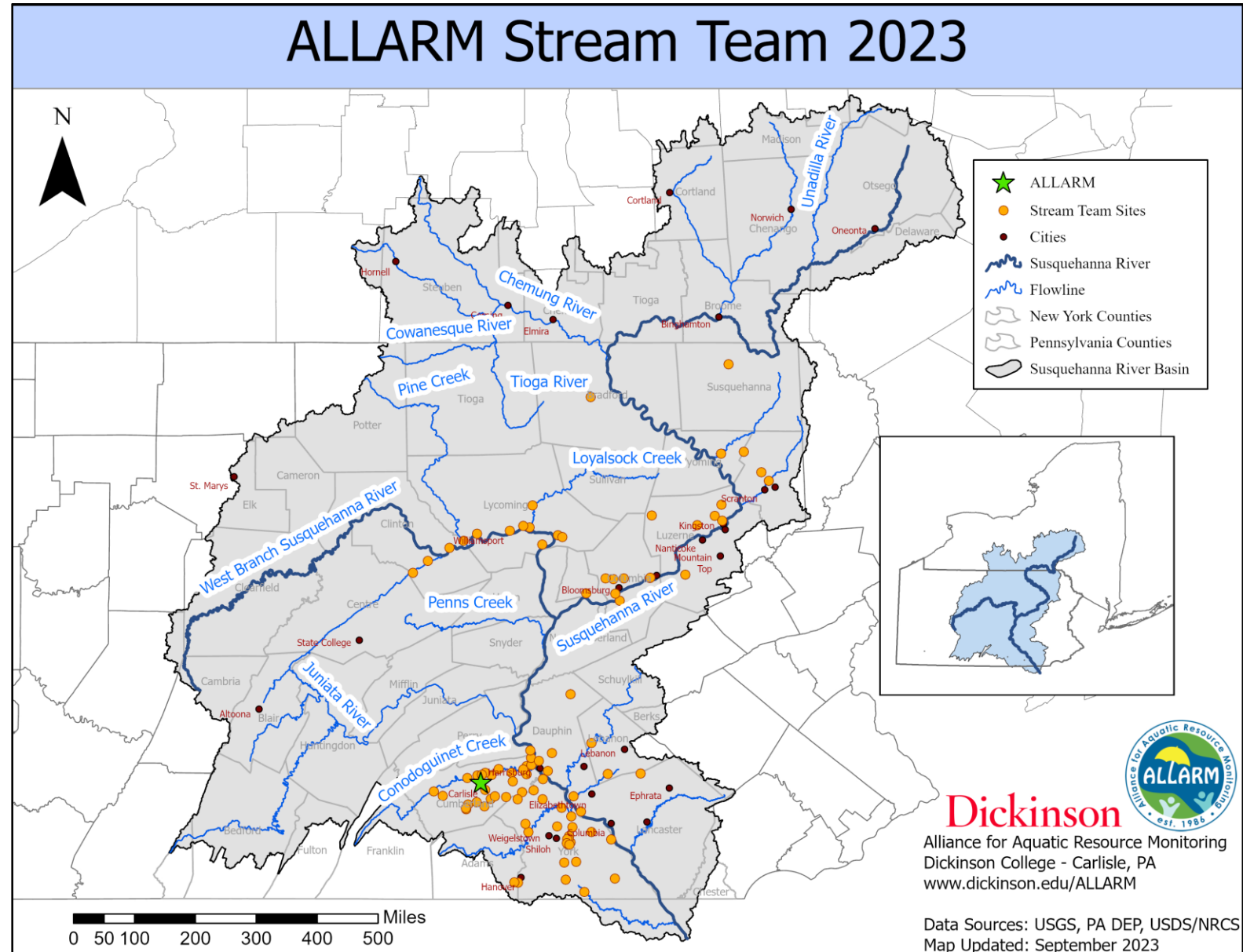


Chesapeake Bay Program  
Monitoring  
Sites +  
Volunteer &  
Nontraditional  
monitoring  
sites



# ALLARM's Stream Team

- **Monitoring Goal:** Develop baseline water quality data of a known quality that examines the relationship between land use, geology, and watershed health
- 130+ volunteers in 14 Pennsylvania counties
  - Armstrong
  - Bradford
  - Clinton
  - Columbia
  - Cumberland
  - Dauphin
  - Lackawanna
  - Lebanon
  - Luzerne
  - Lycoming
  - Susquehanna
  - Westmoreland
  - Wyoming
  - York





The Stream Team Volunteer Experience





# Stream Team Information Session



# Monthly Monitoring Workshop

# Monthly Monitoring Begins!

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# Quality Assurance/ Quality Control





### Welcome to the Chesapeake Data Explorer!

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Map Query

Station Type

- Water Quality
- Benthic Macroinvertebrate

Total Sampling Events

- < 10
- 10 - 50
- 51 - 100
- > 100

Stephanie Letourneau (she)

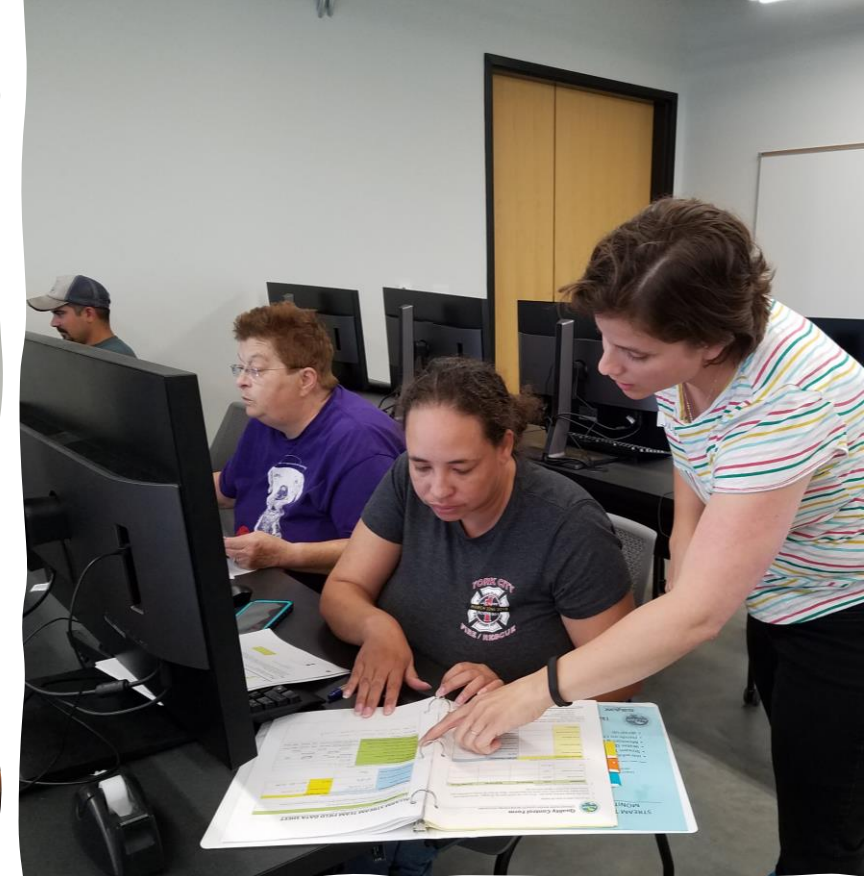
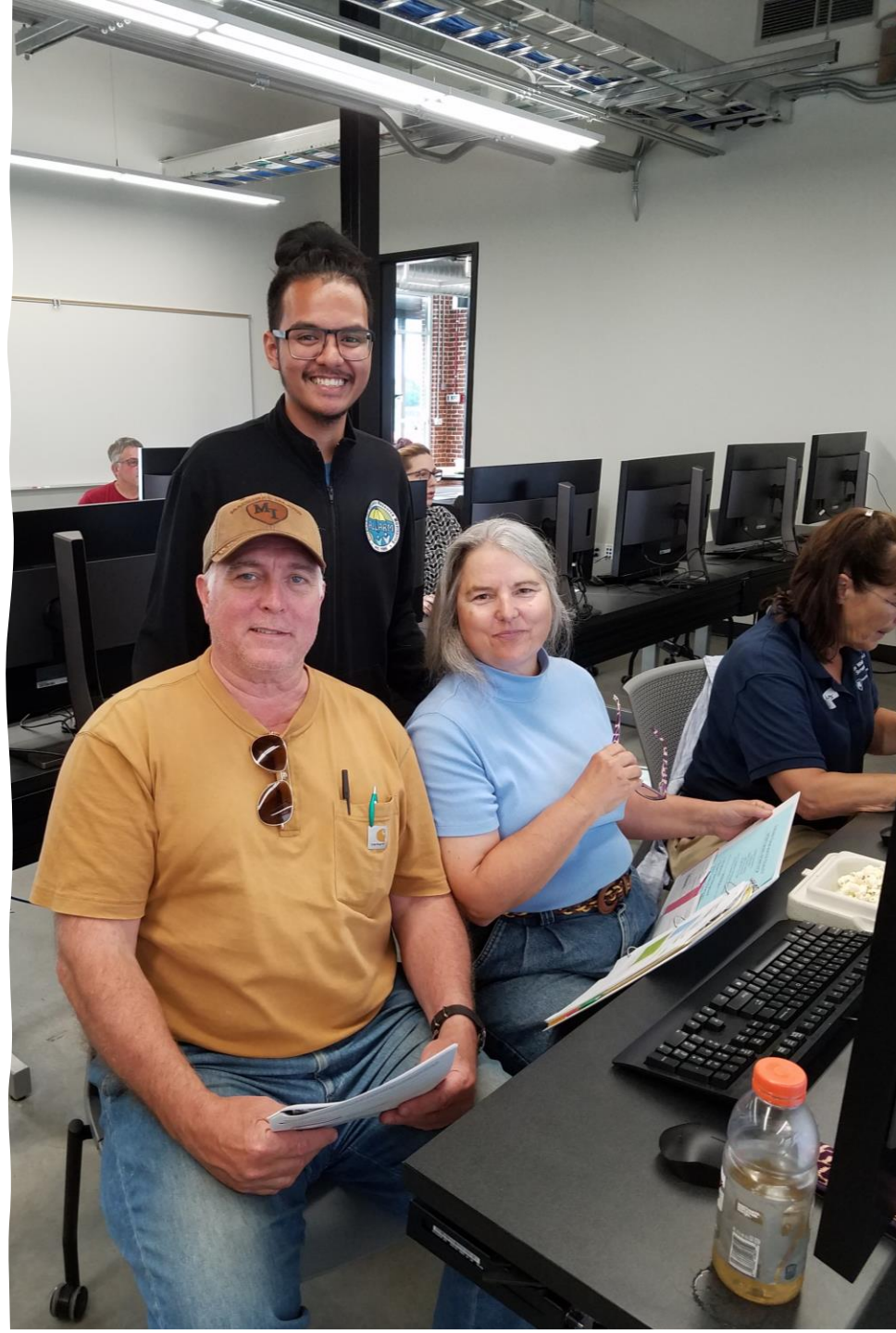
Instructions



## Follow-Up Meetings and Open Calls



# Data Upload Workshop



Handbook for Cit... Chesapeake Bay P... Chesapeake Execut... Citizen Science Act... InDesign how to InDesign how to Receiving and Send... https://cncms.ed... CMC Notes - Goo... Stephanie Letourne...

CMC Chesapeake Monitoring Cooperative Home About Contact Resources Register Log in

**Data Type**  
Water Quality

**Geographical Type**  
Political Boundary

**States (Pick all that apply)**  
All States

**City/County (Pick all that apply)**  
All Cities and Counties

**Groups (Pick all that apply)**  
All Groups

**Stations (Pick all that apply)**  
All Stations

**Parameters (Pick all that apply)**  
All Parameters

**Start Date**  **End Date**

**Choose Optional Metadata to Include With Download:**  
 Parameters  
 Stations  
 Calibration Samplers

**Please check data use acknowledgement prior to download:**  
 I, as the data user, acknowledge that the data belong to the original data provider and will properly credit the data provider(s) in any product that uses their data.



# Macroinvertebrate Workshop

# Data Interpretation Process

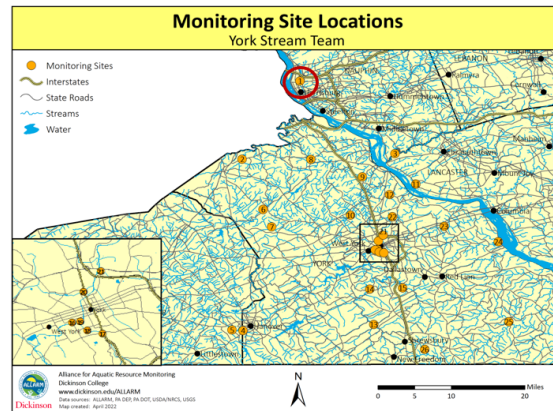
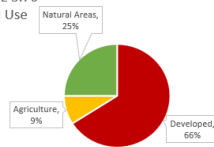
## Site Profile

Paxton Creek (PAXCRE 5.76)  
Monitor(s): Ilyse Kazar & Acey Mills

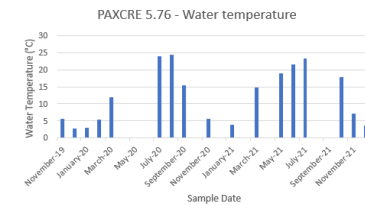
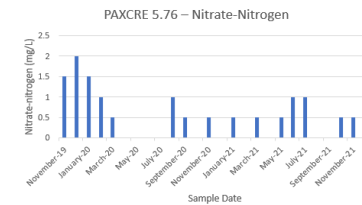
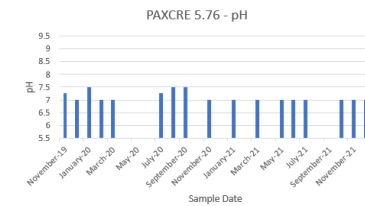
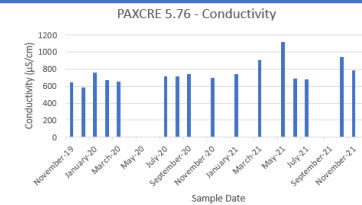
Site information:

- Drains 19 mi<sup>2</sup>
- Impaired: yes (recreational), pathogens
- Designation: Warm Water Fishes
- Geology: non-carbonate (86%), carbonate (14%)

PAXCRE 5.76  
Land Use

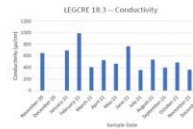
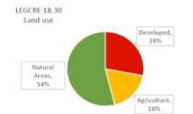


## Bar Graphs



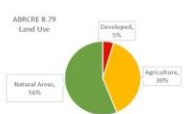
### Impact of land use on three non-carbonate sites

Lackawanna – Leggets Creek 2



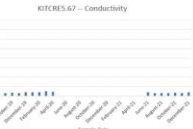
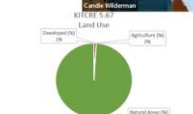
	Cond
Min	356
Max	992
Median	492

Luzerne – Abrahams Creek

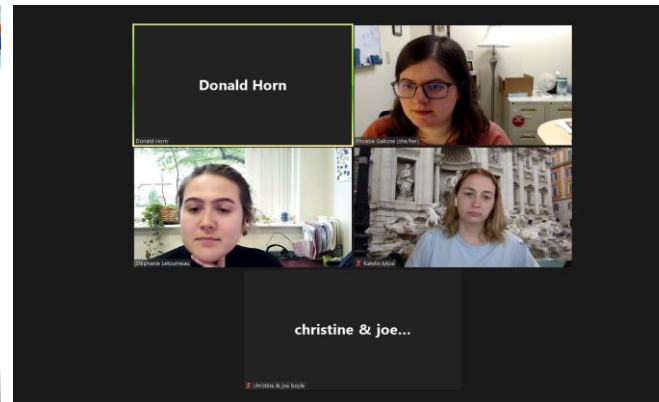


	Cond
Min	124
Max	208
Median	164

Luzerne – K...



	Cond
Min	29
Max	50
Median	34.5

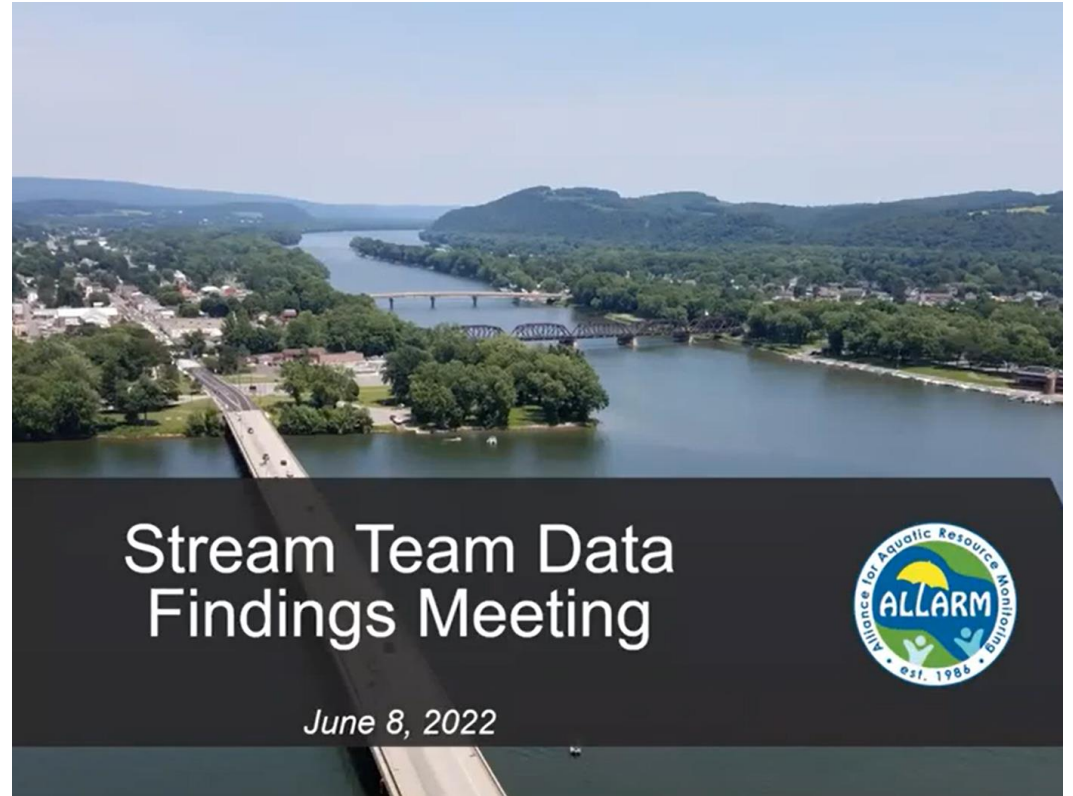


# Kreutz Creek (KRECRE8.67)

Point Source Pollution



- A farm used as a landfill for open domestic dumping beginning in the 1940s.
- Past practices at the landfill contaminated soil, groundwater, and surface water with hazardous chemicals.
- Superfund program in June 1986.
- Current landfill has wastewater treatment plant
- Violations to NPDES began in April of 2018
- Order of Consent was filed in August of 2020



## Stream Team Data Findings Meeting

June 8, 2022



# Data Interpretation Outcomes

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# What's next?

- Program evaluation
- Community engagement
  - Outcomes are people-driven





# Dickinson

# Thank you!

Contact us:

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Alliance for Aquatic Resource Monitoring

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Twitter: @allarmwater

Facebook: [facebook.com/allarmwater](https://www.facebook.com/allarmwater)

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