



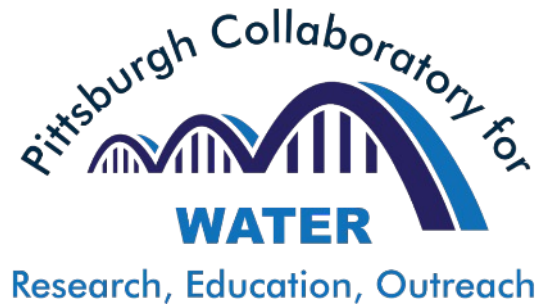
WVU 3RQ Roundtable

The Water Collaboratory at the
University of Pittsburgh
water.pitt.edu

Patrick D. Shirey pds25@pitt.edu
Department of Geology and Environmental
Science

1/19/2023

The **MISSION** of the **Water Collaboratory**

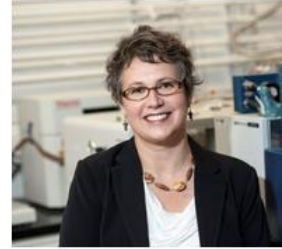
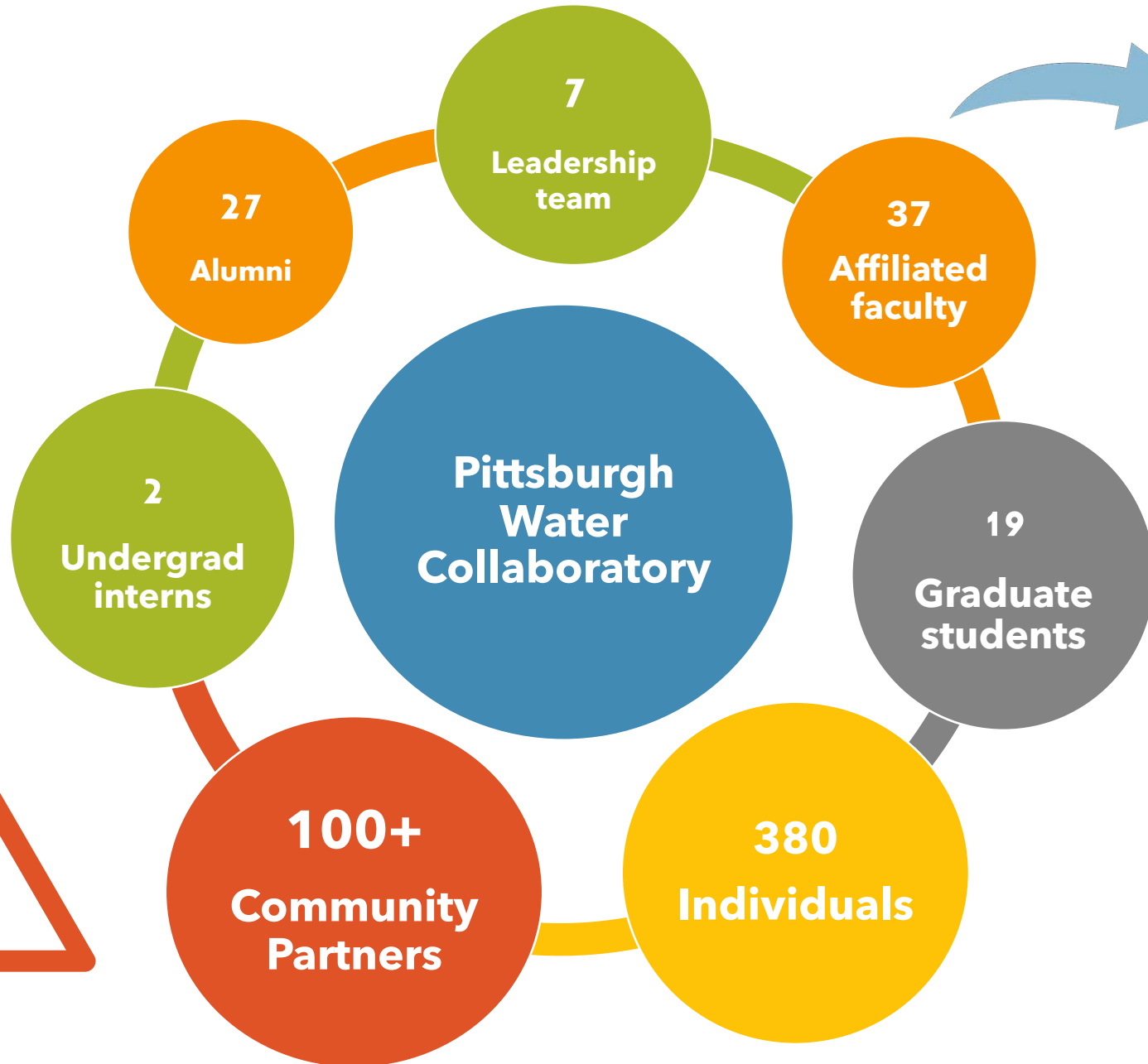


THE HEINZ ENDOWMENTS
HOWARD HEINZ ENDOWMENT • VIRA L. HEINZ ENDOWMENT

Elevate water resource sustainability and resilience by



Who is the Water Collaboratory?



Emily M Elliott »



Daniel J Bain »



John R Gardner »



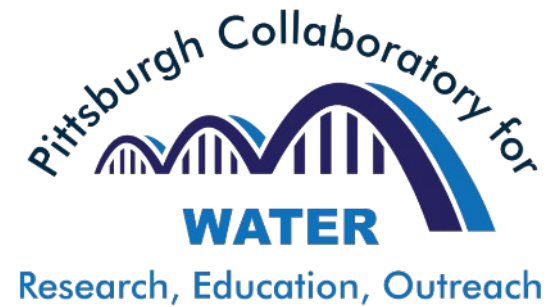
Megan Guy »



Eitan Shelef »



Patrick Shirey »



Jonathan Burgess »

Community partnerships are key to our research, mentoring and training.



GetTheLeadOutPgh

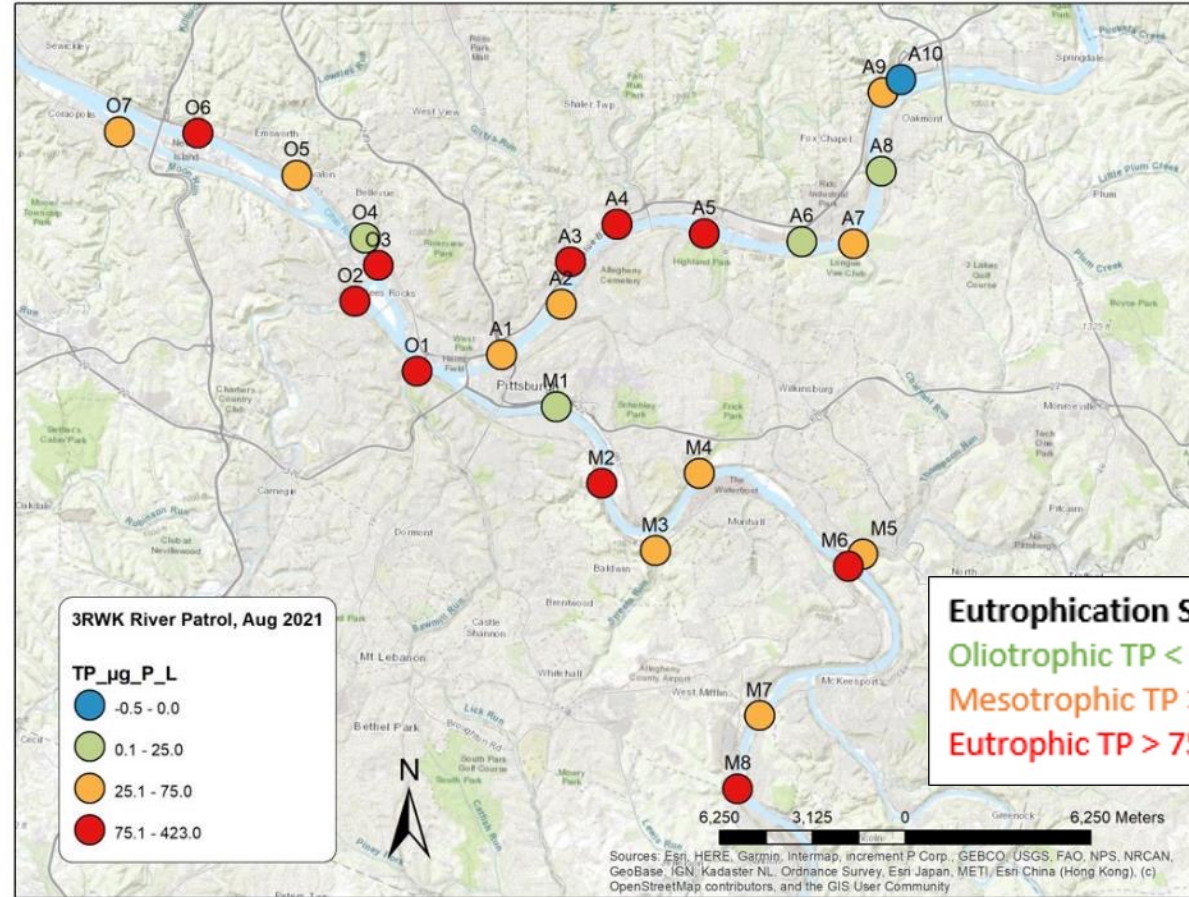
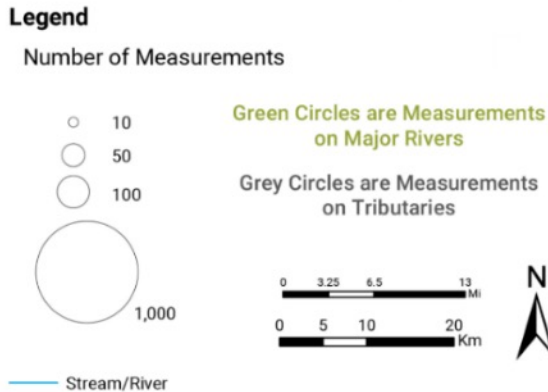
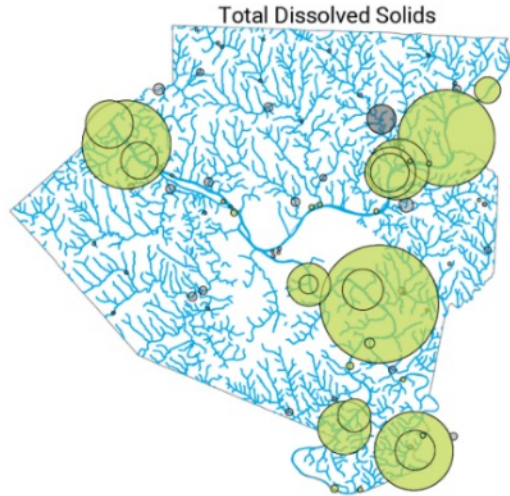


Measuring

- **water quality in streams** emptying into regional rivers with regional NGOs



Need: No-data...what tributaries are most impacting water quality of the Three Rivers?



Quarterly sampling (21-22)

25 inputs to the Three Rivers

Anions, metals, isotopes, nutrients, TSS

Funding: Pitt Year of Engagement, Heinz Endowments

Measuring

- **water quality in streams**

emptying into regional rivers with regional NGOs



Three Rivers Waterkeeper

Sample collection
Outreach and education (lead)
Data visualization

Pittsburgh Water Collaboratory

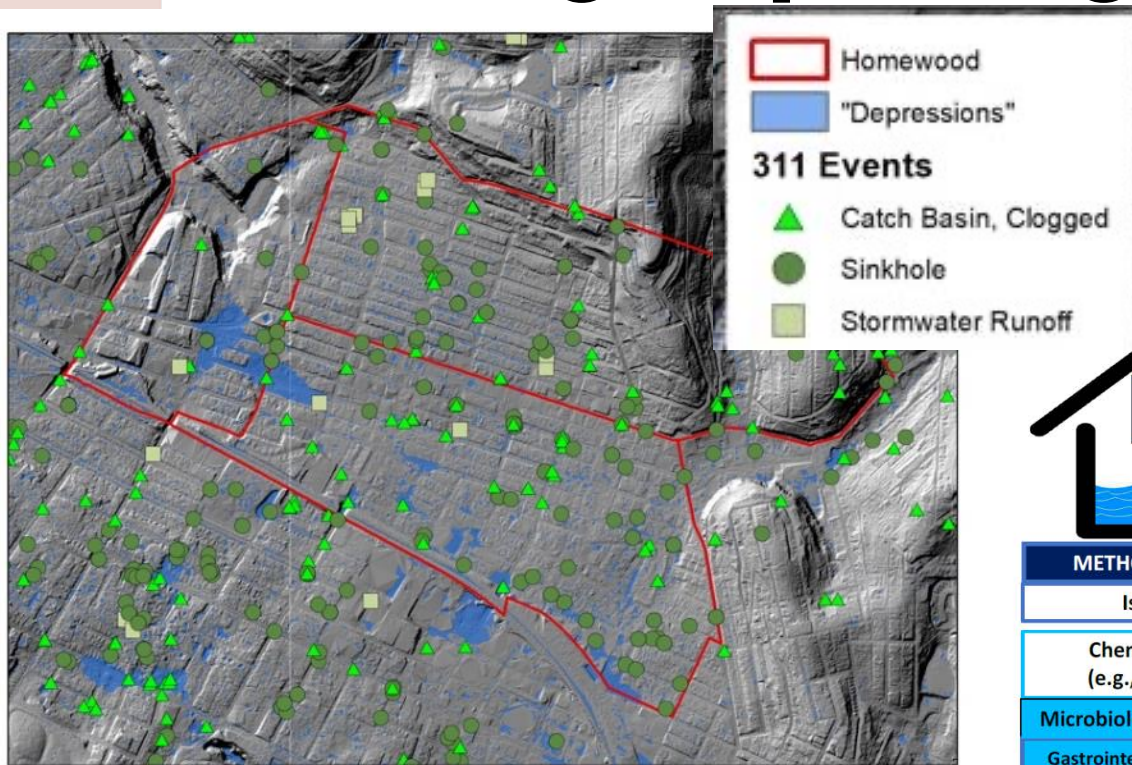
Technical support
Chemical analyses
Data interpretation
Data visualization
Outreach, education (participant)

Outcome:
Optimize future monitoring and enforcement efforts

Funding: Pitt Year of Engagement, Heinz Endowments

Need: How is Pittsburgh basement flooding impacting resident health?

- basement flooding impacts to resident exposures



Lidar map of Homewood (courtesy of D. Bain)

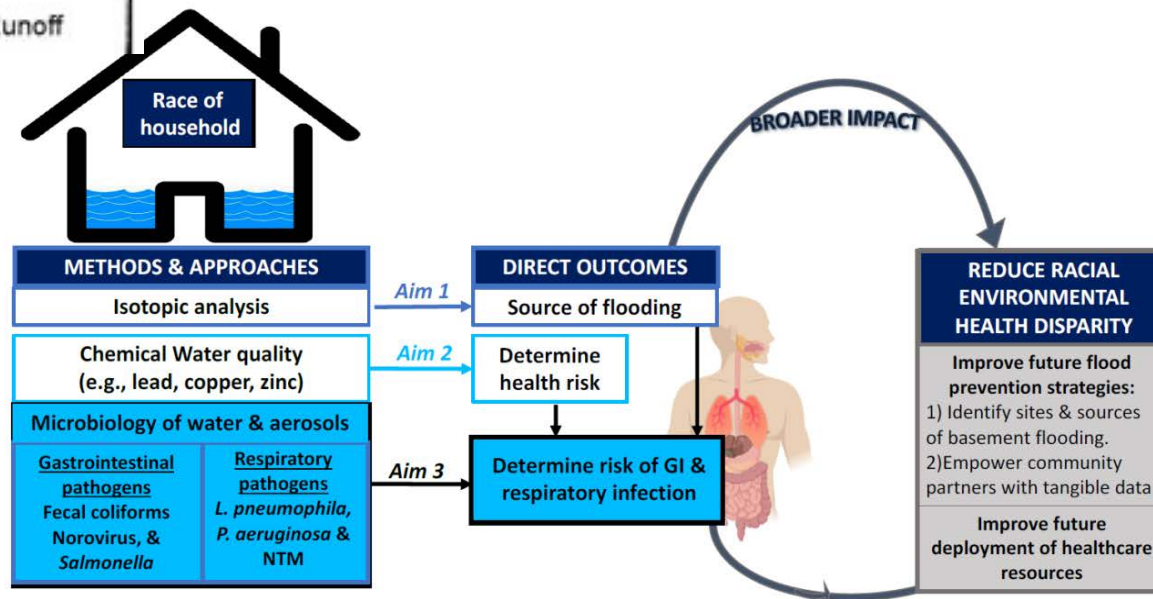


Figure 1: Conceptual model illustrating the proposed research objectives, and broader impact of this study.

- drinking water utilities for affordability, transparency, and water quality



NEED: Are there inequities in regional access to affordable, clean drinking water?

- Evaluating practices used by water authorities across the region
 - Transparency
 - Affordability
 - Water Quality
- Creating Water Supplier Report Cards for 36 water authorities in Allegheny County

DRAFT REPORT CARD

	GRADING CRITERIA	NEEDS IMPROVEMENT	SATISFACTORY	TAKING INITIATIVE	BEST PRACTICE
TRANSPARENCY	Board Meetings public and accessible				✗
	Ease of accessibility to report complaints and problems			✗	
	Water Education for consumers		✗		
	Billing Process		✗		
	Responsiveness*			✗	
AFFORDABILITY	Water affordability protections			✗	
	Enrollment Process (multiple ways to enroll, types of beneficiaries, etc.)		✗		
	Community Engagement/Outreach on available programs		✗		
	Shut off Moratorium in place			✗	
WATER QUALITY	2019 Shutoffs Rate				
	Lead service line inventory exists				✗
	Partial Lead line service replacement				✗
	Full lead service line replacement			✗	
	Availability and cost of voluntary lead testing			✗	
	Meet EPA guidelines for water quality identified in Consumer Confidence Report		✗		

For detailed explanation of grades, please see our [grading rubric](#)

*Responsiveness metric: Water systems were contacted at multiple points between November 2021 and February 2022

Supplier Information
 Customer employee ratio: XX
 Number of Service Connections: XX

LINK TO REPORT | WATER AUTHORITY | LINK TO MAP

Water Collab: Schroering, Guy, Maseru, Bain, Gonzalez-Rivas, Smith, Elliott
 WHE: Musil, Naccarati-Chaptkis, Beightley, Hartwell, Roberts, Donovan

Funding: Pitt Momentum Funds, Heinz Endowments

Evaluating

- **drinking water utilities** for affordability, transparency, and water quality



Outcomes:

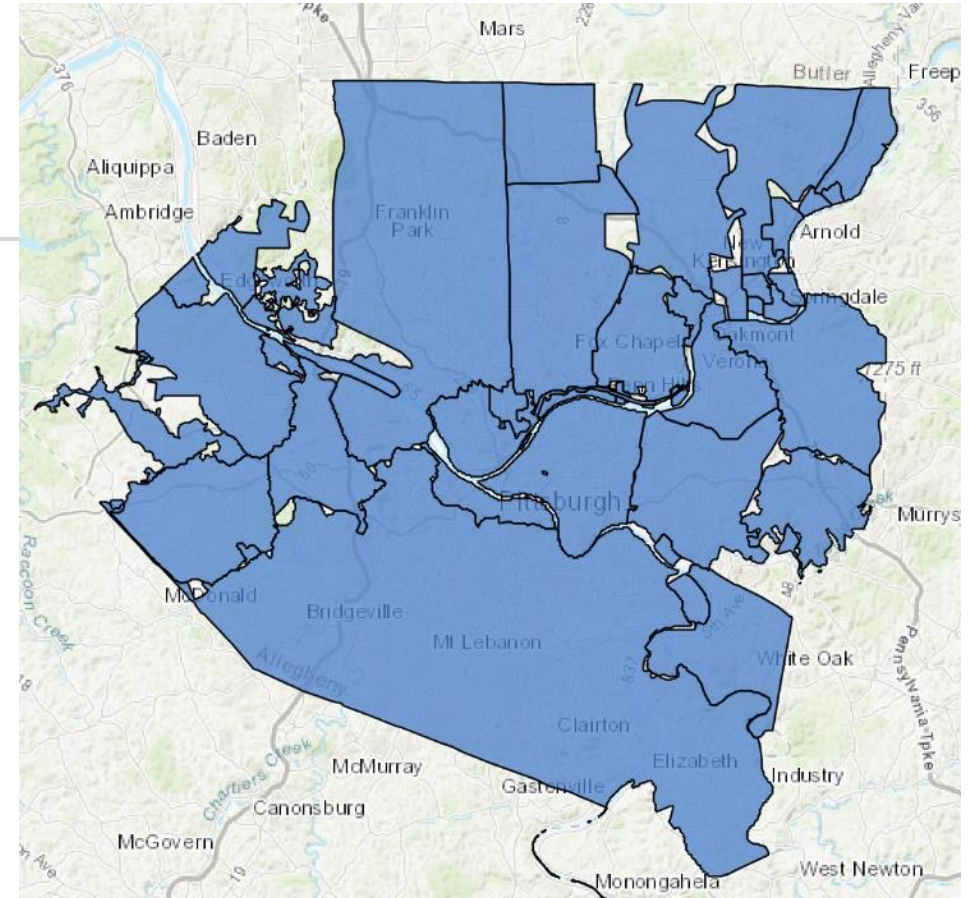
New on-ramps for residents to interact with water system authorities

Encouraging best practices across region

Water Supplier Report Card APP

Find address or place

Welcome!



Funding: Pitt Momentum Funds, Heinz Endowments

Scientists help make sure restoration is toward a historical trajectory

- ▶ MS4 Program under the Clean Water Act (Municipal Separate Storm Sewer System)
- ▶ Ecologist (Shirey) partnering with municipal engineers to improve stream restoration design
- ▶ Data show better ROI than other solutions to reduce sediment pollution for MS4

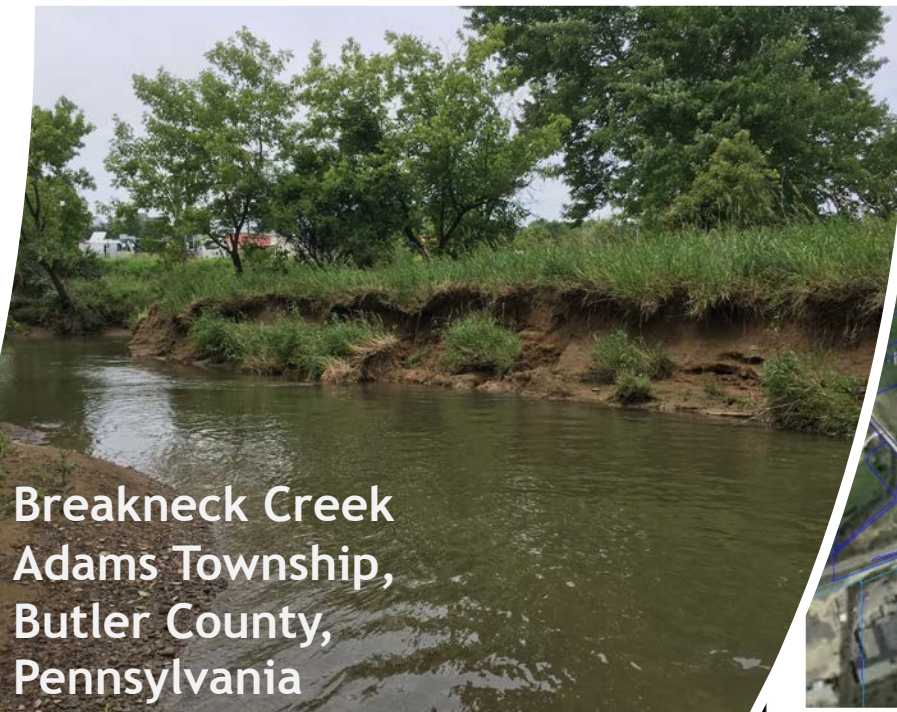
Municipal Engineers:
Ron Olsen & Phil Gryskewicz
Olsen & Associates LLC
Butler, PA



Stream bank covered in legacy sediment



>2meters to historical floodplain



Breakneck Creek
Adams Township,
Butler County,
Pennsylvania

inc. 123 RIDGE ROAD
MARS, PA 16046
g Service Assoc.
-Mail: messia@marbcom.net Fax: (724) 825-4548



Thinking beyond MS4 requirements - How can we use Infrastructure to provide access to nature in all communities?



"Every Neighborhood has a Naturehood"
USFS (DiscoverTheForest.org)



But is that naturehood accessible in our built environments?

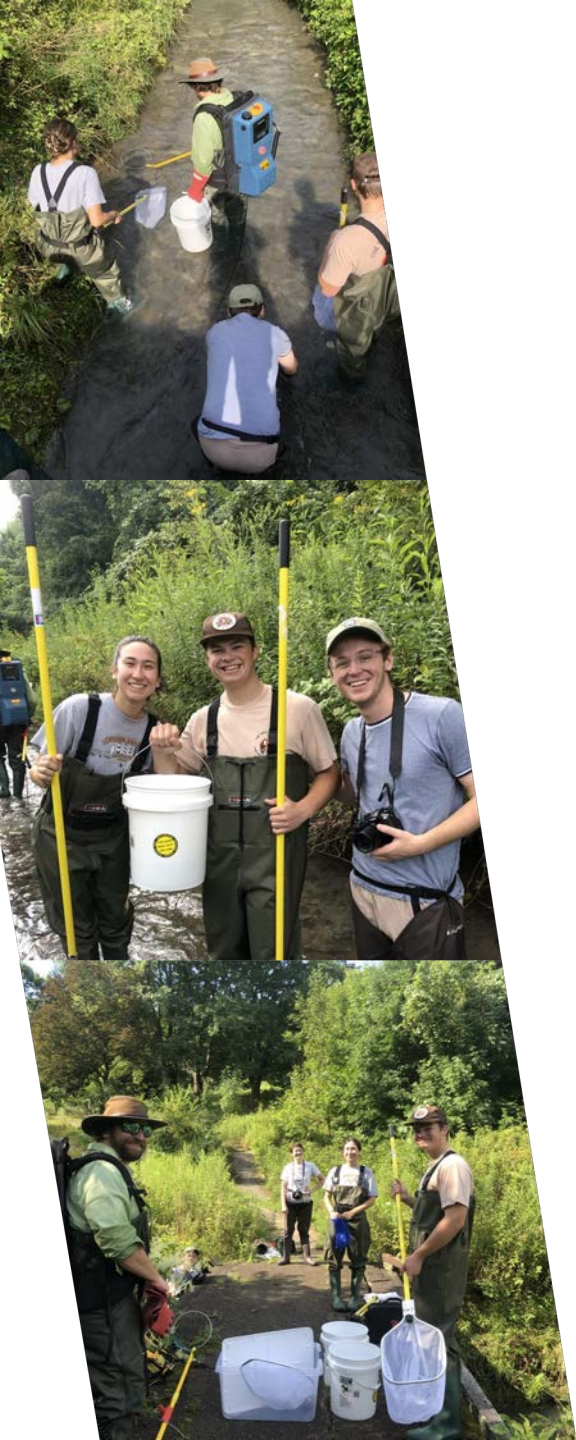
Adjacent to billboard-commercial development to stream edge and no public access



Plum Creek, border of Oakmont - Verona

Churchill Valley Greenway

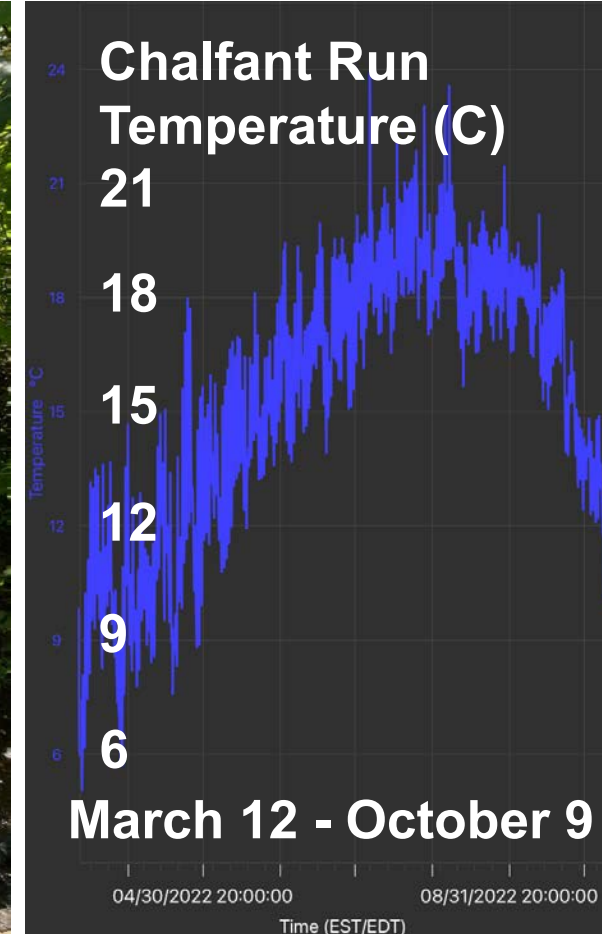
- ▶ Initial work supported by Pitt Year of Data and Society \$8,000 grant to Sarah Moore (film and media) and Patrick Shirey (environmental studies)
- ▶ BACI-design to monitor restoration of streams and wetlands
- ▶ Pollution from Acid Mine Drainage limits fish community to two species: Creek Chub and Eastern Blacknose Dace
- ▶ Looking for external funding for community-engaged research
- ▶ **Watershed Moment for Pitt Video**



A Nature-based approach can unlock additional funding for large projects plus community benefits Example - Churchill Valley Greenway - Allegheny Land Trust



CHURCHILL VALLEY GREENWAY
January 2022



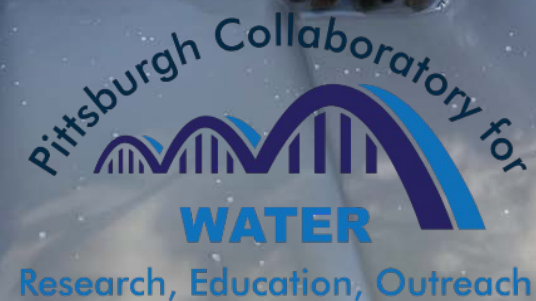
The Ecology Policy Lab at the University of Pittsburgh can help with ordinances, restoration planning, water quality monitoring, and ecology

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724-316-5167

YouTube

“Watershed Moment for Pitt”

<https://www.youtube.com/watch?v=Yqy24rJove8>





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