# **WELCOME! EnviroDIY and monitoring in the DRB monthly meeting** *Online, Thursday, July 20, 2023, 2:30-3:30p*



# Today's Agenda

- 1. Introduction
- 2. Stroud Updates
- 3. Presentation Comprehensive progress update from the Local Policy/Practice Workgroup, Ian Brastow, Dave Manning, and Steve Tricarico
- 4. Discussion
- 5. Conclusion



# \*Meeting is being recorded



\*Please mute when not speaking to the group

## These Monthly Meetings

#### Recordings available at: https://wikiwatershed.org/drwi/



# These Monthly Meetings

- Every third Thursday of the month
- 2:30-3:30p
- Zoom link will remain the same: <u>https://us02web.zoom.us/j/81881801310?pwd=eUFmbXZLbmRibV</u> <u>cxa1dtNVhzRmNvZz09</u>
- Reminder email one week prior to each month's meeting
  - All are welcome, please share
  - And let us know if others should be added

## REMINDER

- Attendees include:
  - Groups working in Delaware River Watershed Initiative (DRWI)
  - Groups working in Delaware River Basin (DRB) but not DRWI
  - Folks from outside the DRB
- Stroud Center support via DRWI and C-SAW

# Delaware River Watershed Initiative (DRWI)

### https://4states1source.org/

**4States1Source** 

The Delaware River Watershed Initiative

OUR WATER OUR WORK FIELD NOTES TAKE ACTION

DELAWARE RIVER WATERSHED INITIATIVE

### Working across four states to protect one shared source of clean water



### https://www.c-saw.info/



# Goals for these monthly meetings

- Time to check-in, ask questions, report issues, network, etc.
- **Updates** from the Stroud Center
- Presentations
  - Science
  - Monitoring
  - Watershed management

\*All of this to support gathering good data and using it purposefully

# Stroud Center project personnel

#### Stroud Center team:

#### David Bressler



Project facilitator

#### Rachel Johnson



Research Engineer Technician

#### Christa Reeves



Northern DRB technician and organization collaborator

#### Shannon Hicks



Research Engineer, Mayfly and EnviroDIY Inventor/Designer

# Stroud Center project personnel

#### Master Watershed Steward Facilitators:





George Seeds



### Master Watershed Steward Program



PennState Extension

# Stroud Center project personnel

#### Stroud Center DRWI Leads:

#### Dr. John Jackson



Senior Research Scientist

#### Matt Ehrhart



Director of Watershed Restoration

#### Dr. David Arscott



Executive Director, President Research Scientist

### Stroud Center Perspective – EnviroDIY in the DRB

- Primary Goal
  - Support Station owners, managers, and volunteers
  - Use stations for local purposes
- Secondary Goal
  - Analyze basin-wide data set
  - Develop tools to characterize and contextualize watersheds





# Updates!

 Updates from the Stroud Center on EnviroDIY, science and monitoring, communications, etc.

# Rachel Johnson

- Rachel will no longer be available for EnviroDIY support ☺
- BUT!!! She is starting a master's degree at the University of Delaware in association with the Stroud Center!!!

#### https://stroudcenter.org/news/rachel-johnson-takes-on-new-role/

A Dream Come True: Rachel Johnson Takes on New Role at the Stroud Center



e True: Rachel Johnson Takes on New Role at the Stroud Center



#### By <u>Diane Huskinson</u>

Rachel Johnson is one of Stroud Water Research Center's MVPs. She has helped train hundreds of volunteers and watershed organization staff in the Delaware River basin on how to monitor their local streams using inexpensive, open-source technology.

She not only knows her way around an <u>EnviroDIY™ Monitoring Station</u>; she offers the kind of support that makes volunteers like George Seeds sing her team's praises.

Congra<mark>ts R</mark>achel!!!!

# EnviroDIY and monitoring resources

Guidance materials - <u>https://wikiwatershed.org/drwi/</u>

SwikiWatershed <sup>°</sup>	About	Model	Monitor	Help	News ~	Curricula	DRWI	Videos	Contact	Log In	۹	
Web Tools Advancing Knowledge and Stewardship of Fresh Water								f Like Us	y Follow Us	🖂 Subscribe	O GitHub	

Y WikiWatershed is an initiative of Stroud<sup>™</sup> Water Research Center. The Stroud Center seeks to advance knowledge and stewardship of freshwater systems through global research, education, and watershed restoration.

Home » Delaware River Watershed Initiative Resources

#### Delaware River Watershed Initiative Resources

The Delaware River Watershed Initiative (DRWI) is a cross-cutting collaboration that is working to <u>conserve and restore</u> the streams that supply drinking water to 15 million people in New York, New Jersey, Pennsylvania, and Delaware. In direct support of this initiative, <u>Stroud Water Research Center</u> is facilitating efforts to improve the capacity of watershed groups to conduct scientific investigations associated with DRWI projects, as well as to build general knowledge on the ecology of their watersheds and the broader basin.

These resources were created by the Stroud Center to assist DRWI efforts *specifically focused on stream monitoring using <u>EnviroDIY Monitoring Stations</u>. They may also be of interest to community scientists and watershed groups working in other locations.* 

Shortcuts to General Resources

- EnviroDIY Field Visit Data
- EnviroDIY Monitoring Station Help Resources
- <u>Salt Monitoring Resources</u>
- <u>Data and Data Visualization Resources</u>

Shortcuts to Meetings, Workshops, Conferences

- Monthly EnviroDIY-DRWI User Group Meetings
- <u>User Support Workshops and Trainings</u>
- Conference Presentations
- Watershed Ecology Workshops

# EnviroDIY Field Visit Data Form entry

### https://wikiwatershed.org/drwi/

#### EnviroDIY Field Visit Data

#### Enter Field Visit Data

- View field visit data
- View older data (7/18/2017 to 7/24/2018)

EnviroDIY Field Visit Data Sheets (Printable)

- EnviroDIY Field Visit Data sheet (blank)
- EnviroDIY Field Visit Data sheet tutorial

#### EnviroDIY Monitoring Station Service Requests

Use this form to report technical issues that require assistance from the Stroud Center team.

Submit a Service Request

# EnviroDIY Field Visit Data Form entry

### https://wikiwatershed.org/drwi/

### Fill out any time a station is visited



#### EnviroDIY Field Visit Data

Enter all data online: wikiwatershed.org/drwi; password: drwi www.stroudcenter.org

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Site ID: Stream Name: GPS (Lat/Long): Photos? Yes/No

Precipitation last 24 Hours? Yes/No Amount:

General Notes/ Photo Descriptions:

Location:			
Date:	Arrival Time:	AM/PM?	*EST/EDT?
*EST=Eas (Davlight S	tern Standard Time; El Savings)	DT=Eastern Da	aylight Time

SENSOR CLEANING (Recommended frequency: weekly or biweekly; monthly if only CTD sensor)						
eaned Sensors? Yes/No If Yes, exact time:	AM/PM?	EST/EDT?	*Clean >5 min. before grab sampling			



#### **EnviroDIY Field Visit Data**

If you have trouble with this form, please contact webmaster@stroudcenter.org.

Please enter your email so we can send you a copy of your submitted data and a link for editing

dbressler@stroudcenter.org Switch account

B

\* Required

Email \*

Your email

Name(s)

Your answer

Site ID \*

\*Cleaned Sensors? Yes/No If Yes, exact time

# **EnviroDIY Service Request Form**

### https://wikiwatershed.org/drwi/

#### EnviroDIY Field Visit Data

**Enter Field Visit Data** 

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# EnviroDIY Service Request Form

### Simpler form

- Required info now is very basic – all other info is optional
- Anyone with assistance needs should complete this
  - To make internal record-keeping easier



#### EnviroDIY Monitoring Station Service Request Form

Please complete this form with as much information as possible to assist Stroud Water Research Center technicians in troubleshooting your problem.

\*Please note, station assistance is only available to groups working within the Delaware River Basin.

W dbressler@stroudcenter.org (not shared) Switch account

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* Required
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Name (first and last) \*

Your answer

Organization \*

Your answer

# Support on Snapshots

 Stroud Center support on synoptic sampling (aka <u>snapshots</u> or blitzes)

• Salt (chloride and conductivity)

• Water temperature

• Please be in touch if you would like support in doing this type of monitoring

# If you want, send your photos and stories



Stroud Water Research Center @StroudCenter

Master Watershed Stewards George Seeds and Joe Debes are gearing up for #WorldWaterDay by volunteering to maintain #EnviroDIY Monitoring Stations. The stations collect continuous #waterquality #data. @WaterDataCollab #monitorwater #4states1source #DelawareRiver #DelRiverWatershed



9:02 AM · Mar 21, 2023 · 710 Views

#### Email or Text to:



Stroud Water Research Center @StroudCenter

#CommunityScience is helping to save our streams from #RoadSalt! Learn how at #WatershedCongress with @StroudCenter @WillistownCT @MuskyWatershed and Valley Forge Trout Unlimited. Register at classy.org/event/2023-wat... #citizenscience @DelRiverkeeper



Musconetcong Watershed Association will present

"Community Science Approaches to Our Salty Stream Problem."

Saturdau, March 25 Montgomery County Community College, Pottstown, PA

5:01 PM · Feb 20, 2023 · 264 Views

#### Tweet



Stroud Water Research Center @StroudCenter

Months after the icy conditions that brought the spreading of #deicer & #salt spikes in Tookany Creek that were saltier than seawater, an army of volunteers descended upon dozens of sites in small streams that feed the #DelawareRiver. Read why: stroudcenter.org/news/why-volun... #roadsalt



11:04 AM · Feb 17, 2023 · 284 Views

- Diane Huskinson (dhuskinson@stroudcenter.org; 717-383-1179)
- Dave Bressler (<u>dbressler@stroudcenter.org</u>; 410-456-1071)

# Coming months

- Aug 17 Megan Fork (West Chester University),
- Sept 21 John Jackson (Stroud), science of salt pollution and recent advances
- Oct 19 Dave Bressler (Stroud), monitoring of salt pollution and what to do with the data (tie in guidance from local policy/practice workgroup)
- Nov 16 Volunteer? Requested topic?
- Dec 14 Dave Bressler (Stroud), end of year summary and planning for 2024
  - \*Meeting is currently Dec 21 suggestion to move it to Dec 14

# Next month's presentation (Aug 17)

### **Urban Stream Syndrome in southeastern PA**



#### Megan Fork, PhD

West Chester University

# Any questions before we move on?

# Today's presentation

# Comprehensive progress update from the Local Policy/Practice Workgroup



#### Ian Brastow

Lopatcong Creek Initiative/New Jersey Highlands Coalition

Policy Associate and Lopatcong Creek Initiative Program Manager



#### **Dave Manning**

Master Watershed Steward, Green Valleys Watershed Association, Valley Creek Restoration Partnership

Retired cell biologist



**Steve Tricarico** 

Master Watershed Steward, Tulpehocken Creek Watershed Association/Berks Nature/Berks County Conservation District

Semi-retired mechanical engineer, member of local township board for 20 years

### Local Policy/Practice Workgroup

#### <u>Current leadership:</u>

- Ian Brastow, Lopatcong Creek Initiative/New Jersey Highlands Coalition (NJ)
- David Manning, PA Master Watershed Steward and Schuylkill Water Steward with Green Valleys Watershed Association (PA)
- Christa Reeves, Musconetcong Watershed Association (NJ)
- Alex Jackson, Brodhead Watershed Association (PA)
- Erin Landis, Wissahickon Trails (PA)
- Joe Debes, PA Master Watershed Steward and Stroud Center volunteer (PA)
- Carol Armstrong, PA Master Watershed Steward (PA)
- Tali MacArthur, PA Environmental Council (PEC)/PA Organization for Watersheds and Rivers (POWR)(PA)
- Steve Tricarico, Tulpehocken Creek Watershed Association, member Bern Township planning committee (PA)

#### • Support:

- David Bressler, Stroud Water Research Center (PA)
- Meetings: 1<sup>st</sup> Thursdays, 11 am (Zoom, <u>https://zoom.us/j/5889670619</u>)

### Presenter 1

# Introduction: Comprehensive progress update from the Local Policy/Practice Workgroup



#### Ian Brastow

Lopatcong Creek Initiative/New Jersey Highlands Coalition

Policy Associate and Lopatcong Creek Initiative Program Manager

### Local Policy/Practice Work Group

#### Short Term Charge:

To develop the most effective way of employing stream monitor data – conductivity, temperature, depth, and sometimes turbidity – and related measures to advise and otherwise influence municipal entities. The charge includes an emphasis on stream quality in relation to land use and development.

### Timeline

January 2023

- Formation of LPPWG

February 2023

- First Meeting

March 2023

- Creation of the Short-term Charge
- Planning Starts for a Conversation Cafe in Collaboration with POWR/PEC
- Watershed Councils talk with Alan Hunt from MWA
- PennFuture/Our Pocono Water webinar on Responding to Emerging Threats to Water Quality in the Poconos

May 2023

- Outline for Deliverables Created
- Conversation Cafe with POWR/PEC

### Deliverables

### Topics

- Temperature
- Conductivity
- Depth
- Turbidity
  - Supplemental
- Outreach

### Deliverables Cont.

"Primer" Document

- Detailed
- Advocate Oriented

Handout One-Pager

- Less Detailed
- Outreach Oriented

Review Process

- Internal
- External
- Public/Living Document

### Presenter 2

### Putting stream data to work



**Dave Manning** 

Master Watershed Steward, Green Valleys Watershed Association, Valley Creek Restoration Partnership

Retired cell biologist

# Putting Stream Temperature Data to Work

- Section 1: Determinants of stream temperature
- Section 2: Temperature thresholds for aquatic organisms
- Section 3: Land use and development of concern
- Section 4: Approaching municipalities
- Section 5: Case studies

# Putting Stream Temperature Data to Work: *Progress*

- Section 1: Completed
- Section 2: Underway
- Section 3: Completed
- Section 4: Underway
- Section 5: Not yet begun

### **Determinants of stream water temperature:**

- Groundwater temperature
- Air temperature
- Solar radiation
- Precipitation
- Evaporation
- Stream mixing

# Temperature thresholds for aquatic organisms:

- Preliminary concepts
- Temperature thresholds for fish
  - Lead: Brook trout
  - General sense as to other relevant fish
- Temperature thresholds for macroinvertebrates
  - Lead: Mayflies
  - General sense as to other relevant invertebrates

### Land use and development of concern:

- Impervious surface
- **Deforestation**
- Impoundments
- Discharge of heated effluents

# Approaching municipalities:

• When to approach municipalities

### • Factors that motivate municipalities

- Economics (fishing and other forms of aquatic recreation)
- Stream temperature as a proxy for other temperature issues
- Community sentiment regarding the environment

### Shaping municipal decisions

- Tools recommended in separate document
- Being able to convey the importance of refugia
- Understanding and being able to argue for various forms of remediation

**Putting Stream Temperature Data to Work:** *Deliverables* 

- > Document (Sections 1 5)
- > Bulleted summary of document
- > Template (adaptable) for handout to community groups

### Presenter 3

### "Document Five" Engaging Municipalities



**Steve Tricarico** 

Master Watershed Steward, Tulpehocken Creek Watershed Association/Berks Nature/Berks County Conservation District

Semi-retired mechanical engineer, member of local township board for 20 years

### Supplemental Hand-outs

One for each of the four topics. Each provides condensed information specific to the topic. The type of information provided follows the format listed below:

- 1. Describe the importance of the subject
- 2. Describe why there may be problem
- 3. Identify causes of the problem
- 4. Provide a local example
- 5. What can residents and homeowners do to help
- 6. What can municipal leaders do to help
- 7. Conclusions
- 8. Sources of additional information

https://docs.google.com/document/d/1jBpaQnnUiV0Ufq77XL6kcTkQIWhbWFQ/edit?usp=sharing&o uid=117002811649901236595&rtpof=true&sd=true

### Municipalities Defined

- Municipalities are local government units that are responsible for governing specific geographic areas, such as cities, towns, or villages.
- They operate at a level below the State government and play a crucial role in providing essential services and managing local affairs.
- The structure and functions of municipalities can vary from one State to another and from one municipality to another.
- Municipalities play a vital role in ensuring the well-being and quality of life for residents within their boundaries, and their functions are designed to address the specific needs and challenges of local communities.

### Municipalities Responsibilities

- **Public Services:** These services include water supply, sewage and waste management, street maintenance, public transportation, and street lighting.
- Urban Planning and Zoning: Municipalities regulate land use through zoning laws and urban planning. They determine how land can be developed and ensure that construction adheres to safety and environmental regulations.
- **Public Safety:** Municipalities typically oversee local law enforcement agencies and fire departments.
- **Parks and Recreation:** Municipalities often maintain and manage public parks and recreational facilities.

### Municipalities' Responsibilities (continued)

- Taxation and Financial Management: Municipalities collect taxes from residents to fund the services they provide and they also manage their budgets.
- Local Governance and Representation: Municipalities have elected officials, who represent the interests of the local community and make decisions on its behalf.
- Infrastructure Development: Municipalities are responsible for maintaining and improving local infrastructure, including roads, bridges, and public buildings.
- Environmental Protection: Some municipalities take initiatives to protect the local environment and promote sustainable practices within their area.

### Stormwater Regulations

Stormwater regulations associated with the Federal Clean Water Act (CWA) are administered under the MS4 Program by the Environmental Protection Agency (EPA). In Pennsylvania, the MS4 program is managed by the Pennsylvania Department of **Environmental Protection (PADEP) and implemented** by Municipalities. Sometimes this is referred to as an "unfunded mandate" as the State requires the Municipality to meet the requirements but the State does not provide funds to the Municipality to accomplish these activities.

### Stormwater Regulations MCM

- **Minimum Control Measure #1**: Public Education & Outreach on Stormwater Impacts
- Minimum Control Measure #2: Public Participation/Involvement
- Minimum Control Measure #3: Illicit Discharge Detection & Elimination
- Minimum Control Measure #4: Construction Site Runoff Control.
- Minimum Control Measure #5: Post-Construction Stormwater Management
- Minimum Control Measure #6: Pollution Prevention/Good Housekeeping

# Municipalities In Action

How Do Municipalities Go About Carrying Out These Responsibilities?

In the case of Pennsylvania, the State government delegates significant authority to its counties, municipalities, and local governments. These local entities have considerable autonomy in making decisions and implementing policies that directly affect their communities. This decentralized approach allows for a more tailored and responsive governance system that can address the specific needs and preferences of different regions within the state.

# Municipalities In Action (continued)

Where Do Municipalities Receive Guidance?

**Pennsylvania Municipalities Planning Code** serves as a tool to empower and guide municipalities in managing land use, promoting orderly development, protecting community character, and balancing the needs of residents, businesses, and the environment.

https://conservationtools.org/library\_items/1658-Pennsylvania-Municipalities-Planning-Code

# Municipalities and EnviroDIY

The Intersection of DRB Concerns and Municipality Responsibilities and Priorities

- Lack of Ordinances protecting the environment
- Existing Ordinances regarding Environmental Requirements are not being followed or not being enforced
- MS4 requirements not being met

### **Engaging Municipalities**

How Do We Establish Relationships with Municipalities That Enables Us To Work With Them, Build Bridges and Influence their Decision Making

This is where Document Five can help!

https://docs.google.com/document/d/1t7er1DsnF5LdjGh PjGcZxMDJjUAg80NR/edit?usp=sharing&ouid=1170028 11649901236595&rtpof=true&sd=true

### "Document Five" Engaging Municipalities

This document is intended to walk you through the process of understanding local government structure and function. It also provides guidance on identifying, talking to, and collaborating with appropriate municipal decision makers. Engaging municipal leaders is a key link in using your data to champion necessary changes to protect the natural environment.

### "Document Five" Sections

- A. Importance of Engaging with Municipalities
- B. Research and Preparation
- C. Building Relationships
- D. Effective Communication
- E. Develop a Strategy
- F. Engage in Constructive Dialogue
- G. Follow Up
- H. Conclusion

Appendix - Step by Step Approach in Working with Municipalities

# Thanks to Ian, Dave, and Steve



#### Ian Brastow

Lopatcong Creek Initiative/New Jersey Highlands Coalition

Policy Associate and Lopatcong Creek Initiative Program Manager



#### **Dave Manning**

Master Watershed Steward, Green Valleys Watershed Association, Valley Creek Restoration Partnership

Retired cell biologist



#### **Steve Tricarico**

Master Watershed Steward, Tulpehocken Creek Watershed Association/Berks Nature/Berks County Conservation District

Semi-retired mechanical engineer, member of local township board for 20 years

# Mentors currently available

- Carol Armstrong (MWS), <u>mnem.np@gmail.com</u>, 610-659-7477
- George Seeds (MWS), <u>geoseeds@verizon.net</u>, 484-886-9586
- Rachel Johnson (Stroud Center), rjohnson@stroudcenter.org, 973-557-8995
- Christa Reeves (Musconetcong Watershed Association/Stroud Center), <u>christa@musconetcong.org</u>, 727-520-5849

## Conclusion

Next month's meeting will be on:

# Thursday August 17, 2023 2:30-3:30p

# Onward!

#### **Stroud Water Research Center contacts:**

- David Bressler, dbressler@stroudcenter.org, 410-456-1071
- Shannon Hicks, shicks@stroudcenter.org, 610-268-2153 x267
- Rachel Johnson, rjohnson@stroudcenter.org, 973-557-8995
- Christa Reeves, christa@musconetcong.org, 908-537-7060

#### Master Watershed Stewards contacts:

Carol Armstrong, mnem.np@gmail.com, 610-659-7477

George Seeds, geoseeds@verizon.net, 484-886-9586