

# Consortium for Scientific Assistance to Watersheds

Annual Report: January 1 – December 31, 2018

*Transferring knowledge and skills to watershed groups;  
Building capacity to undertake watershed assessments and monitoring.*



***The C-SAW program is funded by a Pennsylvania Department of Environmental Protection Growing Greener grant awarded to the Pocono Northeast Resource Conservation and Development Council in partnership with:***

Alliance for Aquatic Resource Monitoring at Dickinson College  
Conemaugh Valley Conservancy  
Delaware Riverkeeper Network  
Pennsylvania Lake Management Society  
Stroud Water Research Center  
United States Geological Survey

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## Executive Summary

Hundreds of watershed associations, environmental organizations, and community groups in Pennsylvania devote their time, energy, and resources to protect and restore Pennsylvania's streams and lakes. The willingness of citizens to engage in efforts that improve stream and watershed health holds promise for waterways throughout the Commonwealth. The Consortium for Scientific Assistance to Watersheds (C-SAW) provides technical and programmatic assistance to these entities to help them achieve their stream assessment and restoration goals. Since the inception of C-SAW in 2001, C-SAW Partners have helped 355 groups in Pennsylvania and have built their capacity to research and improve their local streams and lakes. **In 2018, C-SAW Partners supported 63 groups and more than 5,600 individuals.**

## C-SAW Partners

There are six C-SAW Partners located throughout Pennsylvania which collaborate regularly to implement the C-SAW program and provide support to organizations seeking assistance. The Partners include:

- a. Alliance for Aquatic Resource Monitoring at Dickinson College (ALLARM)
- b. Conemaugh Valley Conservancy (CVC)
- c. Delaware Riverkeeper Network (DRN)
- d. Pennsylvania Lake Management Society (PALMS)
- e. Stroud Water Research Center (SWRC)
- f. United States Geological Survey (USGS)

## C-SAW Approach

Pennsylvania has long encouraged watershed and lake associations to participate in efforts that improve and protect stream and lake health and understand that they are uniquely positioned to lead these grassroots efforts. The Growing Greener Stewardship Program, which funds C-SAW, exemplifies the Commonwealth's commitment to watershed and lakes groups and its belief in their abilities to create positive change. The C-SAW partnership presents a model for other states to follow and the Partners have highlighted the approach in conversations and presentations at meetings and conferences.

C-SAW Partners strive to provide statewide coverage to new watershed organizations as well as existing groups as they evolve. The Consortium's ability to provide long-term support has come to define the C-SAW program. Although this approach requires an intensive dedication of time and resources initially, it increases the effectiveness of watershed groups over time and builds strong, knowledgeable organizations capable of completing scientific work independently.

Many of the organizations that apply for C-SAW assistance have only recently formed and require support with organizational development and program management before they can effectively proceed with watershed monitoring and assessment. C-SAW Partners work with new and existing organizations to build their capacity, confidence, and ownership to manage their organization and successfully implement stream monitoring and restoration projects. This approach sends ripples far beyond the individuals and organizations assisted, and helps to build stronger individuals, organizations, and communities. One can

see the independence gained by groups over time as they enhance their skills and begin new projects that build upon their increased capacity.

## **C-SAW Assistance**

The primary goal of C-SAW is to enhance the capacity of Pennsylvania watershed and lake organizations to design and implement watershed protection and restoration programs that result in improving the water quality and function of Pennsylvania streams and lakes. To achieve this goal, C-SAW Partners draw upon their knowledge and skill sets to offer three types of assistance:

### **1. Watershed-Specific Technical Assistance (WSTA)**

WSTA is designed to build the capacity of groups to answer specific questions they have about their local watershed. WSTA is targeted, short-term, and often provided as a workshop or series of meetings. Groups may request different types of WSTA over time to address their questions. Examples of WSTA include:

- Study design development
- Macroinvertebrate collection and identification methods
- Aquatic invasive species identification and management
- Data management, analysis, and interpretation

### **2. Mentoring (M)**

Mentoring is often requested by groups implementing complex, long-term (2-5 years) projects. Mentoring is resource-intensive initially but helps to ensure that projects are successful and produce useful results. Once the group's capacity is built, they are able to apply their new skills to undertake projects on their own.

### **3. Quality Control (QC)**

For groups involved in stream monitoring and assessment, QC allows them to verify the quality of the data they are collecting. The following C-SAW Partners are set up to provide QC support to watershed groups throughout Pennsylvania:

- a. ALLARM – water quality parameters
- b. CVC – macroinvertebrate identification
- c. SWRC – macroinvertebrate identification

## **Continuing Need for Assistance**

C-SAW Partners recognize that citizens, in order to be effective in their watershed protection and restoration efforts, must be informed, confident, and able to overcome the disappointments and frustrations they will invariably face. Many of C-SAW's mentored groups are new to watershed protection and require assistance not only with monitoring study design and methods, but also with organizational development. More established groups often require C-SAW assistance to keep their momentum strong as they enter the data interpretation and communication stages of their monitoring programs, or when new issues emerge within their watershed.

As the number of groups benefiting from C-SAW assistance grows, so does the program's exposure. Watershed organizations seek out experienced and knowledgeable support from C-SAW Partners who can train them, provide insights and expertise, and help overcome barriers. The motivation for citizens and watershed organizations to connect to their local environment continues to increase in Pennsylvania and across the country, which increases the demand for C-SAW's limited resources. C-SAW Partners help to spread dollars farther by contributing money and match time to support the program.

This annual report exemplifies the continuing success of the C-SAW program and its ability to provide the necessary programmatic and technical assistance needed for organizations to improve the health of their local streams and lakes and make Pennsylvania watersheds better and cleaner places to live.

## C-SAW Spotlight

**WikiWatershed.org** – A toolkit for designed to help citizens, conservation practitioners, researchers, educators, and students advance knowledge and stewardship of fresh water.

Stroud Water Research Center offers workshops and technical assistance to organizations and individuals interested in learning more about **WikiWatershed.org** and the water quality modeling and monitoring resources available within this toolkit. **Model My Watershed®** is a watershed-modeling web app that enables citizens, conservation practitioners, municipal decision-makers, educators, and students to (1) analyze real land use and soil data in their neighborhoods and watersheds, (2) model stormwater runoff and water-quality impacts using professional-grade models, and (3) compare how different conservation or development scenarios could modify runoff and water quality.

**Monitor My Watershed®, EnviroDIY™**, and the **Leafpack Network®** combine a freely available online software system (Monitor My Watershed) with environmental monitoring technologies and methods to advance water quality monitoring needs. These workshops introduce attendees to the use of open-source hardware solutions to build, deploy, manage, and analyze stream and river monitoring data such as water level, water temperature, electrical conductivity, turbidity, and dissolved oxygen that come from in-situ sensors measuring these variables with high frequency and in real time. The Leafpack Network is focused on aquatic macroinvertebrate ecology and monitoring. Leafpack and aquatic macroinvertebrate workshops cover topics ranging from field collection to invertebrate identification to their use to evaluate stream water quality. These workshops are customized to the organizations (or individuals) interest and needs for use as component tools in their water monitoring, conservation, and restoration programs.

## Summary of Assistance Provided

63

### Groups

Organizations that received assistance (WSTA, mentoring, and QC) from C-SAW Partners.

105

### Workshops

Hands-on, capacity-building event that is facilitated by a C-SAW Partner and is focused on learning a specific skill.

775

### Consultations

Meetings, events, phone calls, etc. a C-SAW Partner facilitates to provide assistance to an organization.

5,614

### Individuals

People assisted through consultations and workshops. Members of an organization benefit from these activities as they interact with workshop participants.

The Assistance Reports and Quality Control Assistance summarize the support provided by each C-SAW Partner in 2018. The thirty Pennsylvania counties that received assistance are colored in blue in the map below.

## Assistance provided by the Consortium for Scientific Assistance to Watersheds (C-SAW) 2001-2018



Alliance for Aquatic Resource Monitoring (ALLARM)  
Data Sources: C-SAW, PA DOT  
Map Created: May 2019

0 20 40 80 Miles



2018 Assistance  
2001-2017 Assistance

## **Assistance Reports**

### **Alliance for Aquatic Resource Monitoring**



## Allegheny County Stream Team

Organization Information		Assistance Information	
New group?	No	Date of initial contact	
Group membership	TBD	Date of scoping meeting	
Watershed name	Multiple	Date approved by PA DEP	
Watershed size	N/A	Date assistance began	
County	Allegheny	Date assistance ended	
In-kind match		Cost of assistance	

The following assistance was provided by the Alliance for Aquatic Resource Monitoring (ALLARM):

	Watershed-Specific Technical Assistance	Mentoring	Quality Control
Assistance Type	X		X

	Jan – Mar	Apr – Jun	Jul – Sep	Oct – Dec	Total
Consultations	6	8	9	16	39
Trainings & Workshops	2	1	2	0	5
Workshop Attendance	1	10	21	0	32
Adults Reached	1	11	32	8	32
Children Reached	0	0	0	0	0
Individuals Assisted	1	11	32	8	32
Schools Reached	0	0	0	0	0
Stream Miles Improved	0	0	0	0	0
Media Outreach	0	0	0	0	0

### January 1 – March 31, 2018

A newly-trained monitor sent their first quality control sample to ALLARM to verify that they are collecting credible data by following the procedures in their monitoring methods manual. ALLARM also helped the monitor set up a system to manage and interpret their monitoring results.

### April 1 – June 30, 2018

ALLARM provided consultations to two different groups in Allegheny County in order to discuss and subsequently set up workshops in the county. Eleven people attended a workshop in Oakmont, PA.

### July 1 – September 30, 2018

Twenty-one people attended an ALLARM stream monitoring workshop in Buena Vista, PA in July. In August, ALLARM held two follow-up meetings to answer monitoring questions and help troubleshoot equipment. ALLARM provided quality control assistance to five monitors who sent five water samples to ALLARM for duplicate sample analysis this quarter.

### October 1 – December 31, 2018

ALLARM provided follow-up support to eight volunteers on identifying appropriate monitoring sites and data management.

## Antietam Watershed Association

Organization Information		Assistance Information	
New group?	No	Date of initial contact	6/30/2003
Group membership	80	Date of scoping meeting	N/A
Watershed name	Antietam Creek	Date approved by PA DEP	10/31/2003
Watershed size	94 mi <sup>2</sup>	Date assistance began	10/31/2003
County	Franklin	Date assistance ended	Ongoing
In-kind match	N/A	Cost of assistance	

The following assistance was provided by the Alliance for Aquatic Resource Monitoring (ALLARM):

	Watershed-Specific Technical Assistance	Mentoring	Quality Control
Assistance Type	X	X	X

	Jan – Mar	Apr – Jun	Jul – Sep	Oct – Dec	Total
Consultations	8	4	15	2	29
Trainings & Workshops	0	0	1	0	1
Workshop Attendance	0	0	8	0	8
Adults Reached	1	0	9	1	9
Children Reached	0	0	0	0	0
Individuals Assisted	6	0	9	1	9
Schools Reached	0	0	0	0	0
Stream Miles Improved	0	0	0	0	0
Media Outreach	0	0	0	0	0

### January 1 – March 31, 2018

ALLARM provided the AWA monitoring coordinator with information about monitoring equipment and reviewed options for managing their new and historical datasets.

### April 1 – June 30, 2018

ALLARM had a phone call with the AWA monitoring coordinator to learn about the status of their stream monitoring program and sent her forms for the group's upcoming quality control event

### July 1 – September 30, 2018

ALLARM met with AWA's monitoring coordinator to discuss their stream monitoring program and review procedures for measuring nutrients. ALLARM provided quality control assistance to eight monitors who sent seven water samples to ALLARM for duplicate sample analysis this quarter.

### October 1 – December 31, 2018

ALLARM provided AWA with data management support and answered questions the group had about their nitrate and orthophosphate kits.

## Audubon Pennsylvania – Stream Studies Program

Organization Information		Assistance Information	
New group?	No	Date of initial contact	12/17/2014
Group membership	50	Date of scoping meeting	1/15/2015
Watershed name	Letort Spring Run	Date approved by PA DEP	5/1/2015
Watershed size	22 mi <sup>2</sup>	Date assistance began	1/15/2015
County	Cumberland	Date assistance ended	Ongoing
In-kind match	N/A	Cost of assistance	

The following assistance was provided by the Alliance for Aquatic Resource Monitoring (ALLARM):

	Watershed-Specific Technical Assistance	Mentoring	Quality Control
Assistance Type	X	X	

	Jan – Mar	Apr – Jun	Jul – Sep	Oct – Dec	Total
Consultations	27	25	13	6	71
Trainings & Workshops	0	4	1	0	5
Workshop Attendance	0	484	13	0	497
Adults Reached	9	44	2	2	44
Children Reached	0	440	11	0	451
Individuals Assisted	9	484	13	2	484
Schools Reached	3	2	1	0	3
Stream Miles Improved	0	0	0	0	0
Media Outreach	0	0	0	0	0

### January 1 – March 31, 2018

ALLARM helped PA Audubon plan their 2018 Stream Studies Program by developing procedures and resources to monitor macroinvertebrates and visually assess stream conditions in limestone streams.

### April 1 – June 30, 2018

ALLARM helped to plan and execute four Stream Studies field trips where over 400 seventh grade students from the Carlisle Area School District spent the day assessing the health of the the Letort Spring Run.

### July 1 – September 30, 2018

ALLARM led an AP Research class from Carlisle High School on a field trip to explore their local watershed, learn how to monitor and assess streams, and discuss best management practices and restoration projects that are used to help improve stream health.

### October 1 – December 31, 2018

ALLARM helped a teacher interpret macroinvertebrate data for her class and scheduled a meeting to plan for the four field trips that will take place next spring

## Beaver County Volunteer Monitors

Organization Information		Assistance Information	
New group?	No	Date of initial contact	7/18/2016
Group membership	4	Date of scoping meeting	7/18/2016
Watershed name	Beaver/Upper Ohio	Date approved by PA DEP	12/5/2016
Watershed size	470 mi <sup>2</sup>	Date assistance began	7/18/2016
County	Beaver	Date assistance ended	Ongoing
In-kind match	N/A	Cost of assistance	

The following assistance was provided by the Alliance for Aquatic Resource Monitoring (ALLARM):

	Watershed-Specific Technical Assistance	Mentoring	Quality Control
Assistance Type	X		X

	Jan – Mar	Apr – Jun	Jul – Sep	Oct – Dec	Total
Consultations	4	1	4	5	14
Trainings & Workshops	0	0	1	0	1
Workshop Attendance	0	1	2	0	3
Adults Reached	4	3	5	2	5
Children Reached	0	0	0	0	0
Individuals Assisted	4	3	5	2	5
Schools Reached	0	0	0	0	0
Stream Miles Improved	0	0	0	0	0
Media Outreach	0	0	0	0	0

### January 1 – March 31, 2018

ALLARM checked in with volunteers in Beaver County during a conference call in February. Data management was discussed as well as options and a timeline for analyzing and interpreting their monitoring results.

### April 1 – June 30, 2018

ALLARM spoke with two volunteers during a bimonthly conference call in June. Volunteers discussed their water quality concerns in the area and how monitoring is going. One volunteer attended a workshop in Allegheny County in order to be trained on the shale gas monitoring protocol.

### July 1 – September 30, 2018

ALLARM scheduled and conducted a follow-up meeting with volunteers in order to connect a new volunteer with volunteers that have been monitoring for a few years. ALLARM provided quality control assistance to two monitors who sent two water samples to ALLARM for duplicate sample analysis this quarter.

### October 1 – December 31, 2018

ALLARM helped a volunteer find potential monitoring sites and got her set up to monitor those sites. This volunteer also joined and participated in a video conference call to review how to calibrate her monitoring equipment and record her results. Another volunteer wanted to add a new monitoring site and consulted ALLARM to talk about the location and how to manage the data.

## Big Spring Watershed Association

Organization Information		Assistance Information	
New group?	No	Date of initial contact	5/19/2015
Group membership	30	Date of scoping meeting	9/10/2015
Watershed name	Big Spring Creek	Date approved by PA DEP	6/3/2016
Watershed size	13 mi <sup>2</sup>	Date assistance began	9/10/2015
County	Cumberland	Date assistance ended	Ongoing
In-kind match	N/A	Cost of assistance	

The following assistance was provided by the Alliance for Aquatic Resource Monitoring (ALLARM):

	Watershed-Specific Technical Assistance	Mentoring	Quality Control
Assistance Type	X		

	Jan – Mar	Apr – Jun	Jul – Sep	Oct – Dec	Total
Consultations	0	2	0	0	2
Trainings & Workshops	0	0	0	0	0
Workshop Attendance	0	0	0	0	0
Adults Reached	0	9	0	0	9
Children Reached	0	0	0	0	0
Individuals Assisted	0	9	0	0	9
Schools Reached	0	0	0	0	0
Stream Miles Improved	0	0	0	0	0
Media Outreach	0	1	0	0	1

### January 1 – March 31, 2018

No assistance provided this quarter.

### April 1 – June 30, 2018

ALLARM attended a Big Spring Watershed Association's monthly meeting and presented the results of a year-long study of the Conodoguinet Creek Watershed, which members of BSWA contributed to. Several members are interested in continuing the project for another year.

### July 1 – September 30, 2018

No assistance provided this quarter.

### October 1 – December 31, 2018

No assistance provided this quarter.

## Bradford County Stream Team

Organization Information		Assistance Information	
New group?	No	Date of initial contact	9/8/2015
Group membership	6	Date of scoping meeting	3/29/2016
Watershed name	Chemung River	Date approved by PA DEP	6/14/2016
Watershed size	3,644 mi <sup>2</sup>	Date assistance began	3/29/2016
County	Bradford	Date assistance ended	Ongoing
In-kind match	N/A	Cost of assistance	

The following assistance was provided by the Alliance for Aquatic Resource Monitoring (ALLARM):

	Watershed-Specific Technical Assistance	Mentoring	Quality Control
Assistance Type	X		X

	Jan – Mar	Apr – Jun	Jul – Sep	Oct – Dec	Total
Consultations	1	4	2	0	7
Trainings & Workshops	0	1	0	0	1
Workshop Attendance	0	1	0	0	1
Adults Reached	1	3	2	0	3
Children Reached	0	0	0	0	0
Individuals Assisted	1	3	2	0	3
Schools Reached	0	0	0	0	0
Stream Miles Improved	0	0	0	0	0
Media Outreach	0	0	0	0	0

### January 1 – March 31, 2018

ALLARM checked in with the monitoring coordinator to see if a follow-up meeting or phone call was needed with the group.

### April 1 – June 30, 2018

ALLARM discussed monitoring options with a potential new volunteer and connected him with other volunteers in Bradford County. ALLARM also provided quality control assistance to one monitor who sent one water sample to ALLARM for duplicate sample analysis this quarter.

### July 1 – September 30, 2018

ALLARM reached out to the two volunteers in Bradford County to see if a follow-up meeting could be scheduled to review the monitoring protocol and data management. One of the volunteers called ALLARM to discuss data management and how he could take more control over this for himself.

### October 1 – December 31, 2018

No assistance provided this quarter.

## Butler County Stream Team

Organization Information		Assistance Information	
New group?	No	Date of initial contact	1/5/2016
Group membership	7	Date of scoping meeting	2/18/2016
Watershed name	Connoquenessing River	Date approved by PA DEP	6/14/2016
Watershed size	273 mi <sup>2</sup>	Date assistance began	2/18/2016
County	Butler	Date assistance ended	Ongoing
In-kind match	N/A	Cost of assistance	

The following assistance was provided by the Alliance for Aquatic Resource Monitoring (ALLARM):

	Watershed-Specific Technical Assistance	Mentoring	Quality Control
Assistance Type	X		

	Jan – Mar	Apr – Jun	Jul – Sep	Oct – Dec	Total
Consultations	1	0	0	0	1
Trainings & Workshops	0	0	0	0	0
Workshop Attendance	0	0	0	0	0
Adults Reached	1	0	0	0	1
Children Reached	0	0	0	0	0
Individuals Assisted	1	0	0	0	1
Schools Reached	0	0	0	0	0
Stream Miles Improved	0	0	0	0	0
Media Outreach	0	0	0	0	0

### January 1 – March 31, 2018

ALLARM assisted one volunteer with managing her monitoring data and understanding the values.

### April 1 – June 30, 2018

No assistance provided this quarter.

### July 1 – September 30, 2018

No assistance provided this quarter.

### October 1 – December 31, 2018

No assistance provided this quarter.

## Conewango Creek Watershed Association

Organization Information		Assistance Information	
New group?	Yes	Date of initial contact	10/18/2017
Group membership	55	Date of scoping meeting	11/9/2017
Watershed name	Conewango Creek	Date approved by PA DEP	4/3/2018
Watershed size	900 mi <sup>2</sup>	Date assistance began	3/24/2018
County	Warren	Date assistance ended	Ongoing
In-kind match	N/A	Cost of assistance	

The following assistance was provided by the Alliance for Aquatic Resource Monitoring (ALLARM):

	Watershed-Specific Technical Assistance	Mentoring	Quality Control
Assistance Type	X		X

	Jan – Mar	Apr – Jun	Jul – Sep	Oct – Dec	Total
Consultations	6	11	1	1	19
Trainings & Workshops	1	1	1	0	3
Workshop Attendance	15	8	1	0	24
Adults Reached	15	8	1	1	15
Children Reached	0	0	0	0	0
Individuals Assisted	15	7	1	1	15
Schools Reached	0	0	0	0	0
Stream Miles Improved	0	0	0	0	0
Media Outreach	0	0	0	0	0

### January 1 – March 31, 2018

ALLARM consulted with CCWA to learn about their monitoring needs and determined that a shale gas workshop would help them answer their water quality questions. A workshop was held for 14 people. As volunteers collect data, ALLARM will continue to provide assistance through data management/interpretation, equipment loans, follow-up meetings, and general technical assistance. ALLARM assisted one volunteer with managing her monitoring data and understanding the values.

### April 1 – June 30, 2018

ALLARM met with members of CCWA for a follow-up meeting to discuss data management and interpretation, collect quality control samples, and answer questions they had about monitoring. ALLARM also provided quality control assistance to eight volunteers who sent seven water samples to ALLARM for duplicate sample analysis.

### July 1 – September 30, 2018

ALLARM provided quality control assistance to one monitor who sent one water sample to ALLARM for duplicate sample analysis this quarter.

### October 1 – December 31, 2018

ALLARM reached out to the group's volunteer coordinator to check in with the group and schedule a follow-up meeting.



## Conodoguinet Creek Watershed Association

Organization Information		Assistance Information	
New group?	No	Date of initial contact	2/16/2002
Group membership	100	Date of scoping meeting	N/A
Watershed name	Conodoguinet Creek	Date approved by PA DEP	4/1/2002
Watershed size	524 mi <sup>2</sup>	Date assistance began	4/1/2002
County	Cumberland & Franklin	Date assistance ended	Ongoing
In-kind match	N/A	Cost of assistance	

The following assistance was provided by the Alliance for Aquatic Resource Monitoring (ALLARM):

	Watershed-Specific Technical Assistance	Mentoring	Quality Control
Assistance Type	X		

	Jan – Mar	Apr – Jun	Jul – Sep	Oct – Dec	Total
Consultations	2	2	0	9	13
Trainings & Workshops	0	0	0	0	0
Workshop Attendance	0	0	0	19	19
Adults Reached	2	8	0	19	19
Children Reached	0	0	0	0	0
Individuals Assisted	0	8	0	6	8
Schools Reached	0	0	0	0	0
Stream Miles Improved	0	0	0	0	0
Media Outreach	0	1	0	2	3

### January 1 – March 31, 2018

ALLARM created maps of the Conodoguinet Creek Watershed to be used in a watershed report and by the Conodoguinet Creek Watershed Association.

### April 1 – June 30, 2018

ALLARM attended a Conodoguinet Creek Watershed Association's monthly meeting and presented the results of a year-long study of the Conodoguinet Creek Watershed, which members of CCWA contributed to. Several members are interested in continuing the project for another year.

### July 1 – September 30, 2018

No assistance provided this quarter.

### October 1 – December 31, 2018

The Conodoguinet Creek Watershed Association is interested in starting up a stream monitoring program and ALLARM met with board members to outline the monitoring process, including the initial study design phase. ALLARM also presented at CCWA's annual meeting in November.

## Corry Stream Team

Organization Information		Assistance Information	
New group?	No	Date of initial contact	2/25/2015
Group membership	11	Date of scoping meeting	3/6/2015
Watershed name	French Creek Watershed	Date approved by PA DEP	3/10/2015
Watershed size	1,236 mi <sup>2</sup>	Date assistance began	3/10/2015
County	Erie & Warren	Date assistance ended	Ongoing
In-kind match	N/A	Cost of assistance	

The following assistance was provided by the Alliance for Aquatic Resource Monitoring (ALLARM):

	Watershed-Specific Technical Assistance	Mentoring	Quality Control
Assistance Type	X		

	Jan – Mar	Apr – Jun	Jul – Sep	Oct – Dec	Total
Consultations	1	0	0	0	1
Trainings & Workshops	1	0	0	0	1
Workshop Attendance	1	0	0	0	1
Adults Reached	1	0	0	0	1
Children Reached	0	0	0	0	0
Individuals Assisted	1	0	0	0	1
Schools Reached	0	0	0	0	0
Stream Miles Improved	0	0	0	0	0
Media Outreach	0	0	0	0	0

### January 1 – March 31, 2018

ALLARM held a monitoring workshop in Warren County in March and a volunteer from the Corry Stream Team attended the workshop as a refresher and to bring resources back to his group.

### April 1 – June 30, 2018

No assistance provided this quarter.

### July 1 – September 30, 2018

No assistance provided this quarter.

### October 1 – December 31, 2018

No assistance provided this quarter.

## Fayette County Stream Team

Organization Information		Assistance Information	
New group?	No	Date of initial contact	2/5/2016
Group membership	3	Date of scoping meeting	3/24/2016
Watershed name	Youghiogheny River	Date approved by PA DEP	6/14/2016
Watershed size	398 mi <sup>2</sup>	Date assistance began	3/24/2016
County	Fayette	Date assistance ended	Ongoing
In-kind match	N/A	Cost of assistance	

The following assistance was provided by the Alliance for Aquatic Resource Monitoring (ALLARM):

	Watershed-Specific Technical Assistance	Mentoring	Quality Control
Assistance Type	X		X

	Jan – Mar	Apr – Jun	Jul – Sep	Oct – Dec	Total
Consultations	2	2	1	2	7
Trainings & Workshops	0	1	0	0	1
Workshop Attendance	0	2	0	0	2
Adults Reached	2	2	1	2	2
Children Reached	0	0	0	0	0
Individuals Assisted	2	2	1	2	2
Schools Reached	0	0	0	0	0
Stream Miles Improved	0	0	0	0	0
Media Outreach	0	0	0	0	0

### January 1 – March 31, 2018

ALLARM helped two volunteers with data management and answered their questions about participating in ALLARM's Volunteer Monitoring Quality Control Program.

### April 1 – June 30, 2018

ALLARM provided quality control assistance to two volunteers who sent one water sample to ALLARM for duplicate sample analysis this quarter.

### July 1 – September 30, 2018

ALLARM communicated with one volunteer who needed calibration solution and started to plan for a follow-up meeting with the 4 active volunteers in the county.

### October 1 – December 31, 2018

ALLARM was in contact with volunteers that had questions about their monitoring equipment and to schedule the next follow-up meeting in 2019.

## God's Country Waterdogs

Organization Information		Assistance Information	
New group?	No	Date of initial contact	3/22/2011
Group membership	50	Date of scoping meeting	N/A
Watershed name	Multiple	Date approved by PA DEP	6/2/2011
Watershed size	N/A	Date assistance began	6/3/2011
County	Potter	Date assistance ended	Ongoing
In-kind match	N/A	Cost of assistance	

The following assistance was provided by the Alliance for Aquatic Resource Monitoring (ALLARM):

	Watershed-Specific Technical Assistance	Mentoring	Quality Control
Assistance Type	X		X

	Jan – Mar	Apr – Jun	Jul – Sep	Oct – Dec	Total
Consultations	3	1	1	5	10
Trainings & Workshops	0	0	1	0	1
Workshop Attendance	0	0	1	0	1
Adults Reached	3	2	2	2	3
Children Reached	0	0	0	0	0
Individuals Assisted	3	2	2	2	3
Schools Reached	0	0	0	0	0
Stream Miles Improved	0	0	0	0	0
Media Outreach	0	0	0	0	0

### January 1 – March 31, 2018

ALLARM spoke with three monitors about their monitoring needs and efforts during a bimonthly conference call. The group is looking to expand their monitoring program and had questions about how and when to begin monitoring new sites for potential impacts caused by shale gas extraction.

### April 1 – June 30, 2018

ALLARM touched base with two volunteers in order to see if a follow-up meeting would be helpful and to check to see if they needed any help establishing new monitoring sites.

### July 1 – September 30, 2018

ALLARM provided quality control assistance to two monitors who sent one water sample to ALLARM for duplicate sample analysis this quarter.

### October 1 – December 31, 2018

ALLARM met with two volunteers in-person to review the monitoring protocol, go over the database, and check in to see how monitoring is going. The volunteers had further questions about data management and site selection, which ALLARM answered through email communication.

## Johnston Run Revitalization Council

Organization Information		Assistance Information	
New group?	No	Date of initial contact	7/25/2012
Group membership	75	Date of scoping meeting	6/20/2013
Watershed name	Johnston Run	Date approved by PA DEP	7/10/2013
Watershed size	9 square miles	Date assistance began	7/30/2013
County	Franklin	Date assistance ended	Ongoing
In-kind match	N/A	Cost of assistance	

The following assistance was provided by the Alliance for Aquatic Resource Monitoring (ALLARM):

	Watershed-Specific Technical Assistance	Mentoring	Quality Control
Assistance Type	X	X	X

	Jan – Mar	Apr – Jun	Jul – Sep	Oct – Dec	Total
Consultations	35	24	25	29	113
Trainings & Workshops	2	1	1	2	6
Workshop Attendance	12	8	8	8	36
Adults Reached	20	8	8	8	20
Children Reached	60	0	0	0	60
Individuals Assisted	12	10	13	10	13
Schools Reached	2	1	1	1	2
Stream Miles Improved	0	0	0	0	0
Media Outreach	1	0	1	0	2

### January 1 – March 31, 2018

ALLARM helped JRRC complete a study design for their new stream monitoring program and held a Volunteer Information Session to give the recruited volunteers a chance to learn about the program and ask questions. Much of the meeting was devoted to choosing and prioritizing site locations. In February, ALLARM facilitated the group's first Water Quality Monitoring Workshop where volunteers learned how to collect and analyze water samples, manage their data, and participate in ALLARM's Volunteer Monitoring Quality Control Program.

### April 1 – June 30, 2018

ALLARM followed-up with the volunteers after their Water Quality Monitoring Workshop to make sure they were comfortable following the methods and using their equipment. ALLARM processed five water samples from eight volunteers for their first quality control event in April.

### July 1 – September 30, 2018

ALLARM met with the Johnston Run volunteers in July to talk about data management and review the process of cleaning glassware. In September, the group reviewed the data that have been collected to date and began to investigate the relationship between water quality and land use activities.

### October 1 – December 31, 2018

ALLARM processed six water samples from seven volunteers for the group's second quality control event in October and worked with volunteers on data management and interpretation.

## Little Sewickley Creek Watershed Association

Organization Information		Assistance Information	
New group?	Yes	Date of initial contact	
Group membership	100	Date of scoping meeting	
Watershed name	Little Sewickley Creek	Date approved by PA DEP	4/3/2018
Watershed size	10 mi <sup>2</sup>	Date assistance began	
County	Allegheny	Date assistance ended	Ongoing
In-kind match	N/A	Cost of assistance	

The following assistance was provided by the Alliance for Aquatic Resource Monitoring (ALLARM):

	Watershed-Specific Technical Assistance	Mentoring	Quality Control
Assistance Type	X		

	Jan – Mar	Apr – Jun	Jul – Sep	Oct – Dec	Total
Consultations	1	0	0	2	3
Trainings & Workshops	0	0	0	0	0
Workshop Attendance	0	0	0	0	0
Adults Reached	1	0	0	1	1
Children Reached	0	0	0	0	0
Individuals Assisted	1	0	0	1	1
Schools Reached	0	0	0	0	0
Stream Miles Improved	0	0	0	0	0
Media Outreach	0	0	0	0	0

### January 1 – March 31, 2018

ALLARM helped a monitor manage and interpret her monitoring results.

### April 1 – June 30, 2018

No assistance provided this quarter.

### July 1 – September 30, 2018

No assistance provided this quarter.

### October 1 – December 31, 2018

ALLARM reached out to set up a follow-up phone call or in-person meeting to discuss monitoring efforts and data management.

## Lower Susquehanna Riverkeeper Association

Organization Information		Assistance Information	
New group?	Yes	Date of initial contact	
Group membership	50	Date of scoping meeting	7/17/2018
Watershed name	Lower Susquehanna River	Date approved by PA DEP	7/26/2018
Watershed size	903 mi <sup>2</sup>	Date assistance began	
County	York	Date assistance ended	
In-kind match	N/A	Cost of assistance	

The following assistance was provided by the Alliance for Aquatic Resource Monitoring (ALLARM):

	Watershed-Specific Technical Assistance	Mentoring	Quality Control
Assistance Type	X		

	Jan – Mar	Apr – Jun	Jul – Sep	Oct – Dec	Total
Consultations	0	0	15	15	30
Trainings & Workshops	0	0	1	1	2
Workshop Attendance	0	0	6	25	31
Adults Reached	0	0	6	25	25
Children Reached	0	0	0	0	0
Individuals Assisted	0	0	6	25	25
Schools Reached	0	0	0	1	1
Stream Miles Improved	0	0	0	0	0
Media Outreach	0	0	0	4	4

### January 1 – March 31, 2018

No assistance provided this quarter.

### April 1 – June 30, 2018

No assistance provided this quarter.

### July 1 – September 30, 2018

ALLARM had multiple conversations and meetings with the Lower Susquehanna Riverkeeper about developing a stream monitoring program for the purpose of engaging volunteers, collecting baseline data, and documenting pollution events in the watershed. ALLARM led LSRA through the study design process and developed a water quality monitoring manual for the group.

### October 1 – December 31, 2018

ALLARM continued conversations with the Lower Susquehanna Riverkeeper and led the first Stream Team training for volunteers in York County in October. Volunteers learned about water quality parameters, how to collect and analyze water samples, and manage their results. The newly-trained volunteers will participate in their first quality control event in January.

## Middle Susquehanna Riverkeeper Association

Organization Information		Assistance Information	
New group?	Yes	Date of initial contact	
Group membership	50	Date of scoping meeting	
Watershed name	Carbon Run	Date approved by PA DEP	10/25/2017
Watershed size	9 mi <sup>2</sup>	Date assistance began	
County	Northumberland	Date assistance ended	
In-kind match	N/A	Cost of assistance	

The following assistance was provided by the Alliance for Aquatic Resource Monitoring (ALLARM):

	Watershed-Specific Technical Assistance	Mentoring	Quality Control
Assistance Type	X		

	Jan – Mar	Apr – Jun	Jul – Sep	Oct – Dec	Total
Consultations	0	0	6	4	10
Trainings & Workshops	0	0	0	0	0
Workshop Attendance	0	0	0	0	0
Adults Reached	0	0	1	1	1
Children Reached	0	0	0	0	0
Individuals Assisted	0	0	1	1	1
Schools Reached	0	0	0	0	0
Stream Miles Improved	0	0	0	0	0
Media Outreach	0	0	0	0	0

### January 1 – March 31, 2018

No assistance provided this quarter.

### April 1 – June 30, 2018

No assistance provided this quarter.

### July 1 – September 30, 2018

ALLARM had multiple conversations and meetings with the Middle Susquehanna Riverkeeper about developing a stream monitoring program for the purpose of engaging volunteers, collecting baseline data, and documenting pollution events in the watershed.

### October 1 – December 31, 2018

ALLARM continued conversations with the Middle Susquehanna Riverkeeper about their stream monitoring program and plans to lead their first Stream Team workshop next summer.



## PA Council of Trout Unlimited

Organization Information		Assistance Information	
New group?	No	Date of initial contact	2/1/2010
Group membership	12,000	Date of scoping meeting	5/17/2010
Watershed name	Multiple	Date approved by PA DEP	2/24/2010
Watershed size	N/A	Date assistance began	2/24/2010
County	Multiple	Date assistance ended	Ongoing
In-kind match	N/A	Cost of assistance	

The following assistance was provided by the Alliance for Aquatic Resource Monitoring (ALLARM):

	Watershed-Specific Technical Assistance	Mentoring	Quality Control
Assistance Type			X

	Jan – Mar	Apr – Jun	Jul – Sep	Oct – Dec	Total
Consultations	10	24	9	9	52
Trainings & Workshops	1	1	1	1	4
Workshop Attendance	3	9	5	3	20
Adults Reached	3	9	6	4	9
Children Reached	0	0	0	0	0
Individuals Assisted	9	9	6	4	28
Schools Reached	0	0	0	0	0
Stream Miles Improved	0	0	0	0	0
Media Outreach	0	0	0	0	0

### January 1 – March 31, 2018

ALLARM provided quality control assistance to three Trout Unlimited monitors who sent three water samples to ALLARM for duplicate sample analysis this quarter.

### April 1 – June 30, 2018

ALLARM provided quality control assistance to nine Trout Unlimited monitors who sent fourteen water samples to ALLARM for duplicate sample analysis this quarter.

### July 1 – September 30, 2018

ALLARM provided quality control assistance to five monitors who sent nine water samples to ALLARM for duplicate sample analysis this quarter.

### October 1 – December 31, 2018

ALLARM provided quality control assistance to three monitors who sent three water samples to ALLARM for duplicate sample analysis this quarter.

## Ridge and Valley Streamkeepers

Organization Information		Assistance Information	
New group?	No	Date of initial contact	9/15/2003
Group membership	30	Date of scoping meeting	N/A
Watershed name	Sideling Hill & Town Creeks	Date approved by PA DEP	10/7/2003
Watershed size	252 mi <sup>2</sup>	Date assistance began	10/7/2003
County	Bedford & Fulton	Date assistance ended	Ongoing
In-kind match	N/A	Cost of assistance	

The following assistance was provided by the Alliance for Aquatic Resource Monitoring (ALLARM):

	Watershed-Specific Technical Assistance	Mentoring	Quality Control
Assistance Type	X		X

	Jan – Mar	Apr – Jun	Jul – Sep	Oct – Dec	Total
Consultations	2	3	9	5	19
Trainings & Workshops	0	0	0	1	1
Workshop Attendance	0	0	0	9	9
Adults Reached	4	1	16	9	16
Children Reached	0	0	0	0	0
Individuals Assisted	2	1	16	9	16
Schools Reached	0	0	0	0	0
Stream Miles Improved	0	0	0	0	0
Media Outreach	0	0	1	0	1

### January 1 – March 31, 2018

ALLARM provided the Ridge and Valley Streamkeepers with information on volunteer-friendly monitoring equipment.

### April 1 – June 30, 2018

ALLARM called the RVS monitoring coordinator to schedule the group's annual quality control event and follow-up with equipment recommendations.

### July 1 – September 30, 2018

ALLARM met with the Ridge and Valley Streamkeepers this quarter and presented on volunteer monitoring efforts in the Chesapeake Bay Watershed at their annual meeting. The group continues to monitor monthly and will participate in their annual quality control event in October.

### October 1 – December 31, 2018

ALLARM met with the RVS monitoring coordinator this quarter and provided quality control assistance to nine monitors who sent eight water samples to ALLARM for duplicate sample analysis.

## Venango PA Senior Environmental Corps

Organization Information		Assistance Information	
New group?	No	Date of initial contact	9/9/2015
Group membership	15	Date of scoping meeting	10/22/2015
Watershed name	Allegheny River	Date approved by PA DEP	10/28/2015
Watershed size	11,580 mi <sup>2</sup>	Date assistance began	10/28/2015
County	Venango	Date assistance ended	Ongoing
In-kind match	N/A	Cost of assistance	

The following assistance was provided by the Alliance for Aquatic Resource Monitoring (ALLARM):

	Watershed-Specific Technical Assistance	Mentoring	Quality Control
Assistance Type	X	X	X

	Jan – Mar	Apr – Jun	Jul – Sep	Oct – Dec	Total
Consultations	4	1	2	6	13
Trainings & Workshops	2	0	0	1	3
Workshop Attendance	2	0	0	15	17
Adults Reached	4	1	1	15	15
Children Reached	0	0	0	0	0
Individuals Assisted	4	1	1	15	15
Schools Reached	0	0	0	0	0
Stream Miles Improved	0	0	0	0	0
Media Outreach	1	0	0	0	1

### January 1 – March 31, 2018

A volunteer from Venango PA SEC attended an ALLARM monitoring workshop in Warren County as a refresher training, primarily to review the monitoring methods, practice using the equipment, and ask questions about data management. ALLARM also provided quality control assistance to two monitors who sent two water samples to ALLARM for duplicate sample analysis this quarter.

### April 1 – June 30, 2018

ALLARM had a phone conversation with a volunteer to discuss water quality concerns and learn about the status of their monitoring program.

### July 1 – September 30, 2018

ALLARM reached out to the leader of PA SEC's volunteer monitoring group to set up a time to meet with volunteers in-person to talk about shale gas monitoring and potentially adding other parameters to their monitoring protocol. The leader also discussed having ALLARM talk about program updates during the meeting, to keep all of the volunteers updated on changes at ALLARM.

### October 1 – December 31, 2018

ALLARM helped a volunteer with data management and site selection and met with 15 volunteers to give updates about ALLARM and to discuss their monitoring program, the study design process, and adding new parameters.

## Westmoreland County Stream Team

Organization Information		Assistance Information	
New group?	No	Date of initial contact	7/20/2015
Group membership	15	Date of scoping meeting	3/24/2016
Watershed name	Lower Allegheny River	Date approved by PA DEP	6/3/2016
Watershed size	611 mi <sup>2</sup>	Date assistance began	3/24/2016
County	Westmoreland	Date assistance ended	Ongoing
In-kind match	N/A	Cost of assistance	\$

The following assistance was provided by the Alliance for Aquatic Resource Monitoring (ALLARM):

	Watershed-Specific Technical Assistance	Mentoring	Quality Control
Assistance Type	X		X

	Jan – Mar	Apr – Jun	Jul – Sep	Oct – Dec	Total
Consultations	12	6	3	5	26
Trainings & Workshops	1	1	0	0	2
Workshop Attendance	9	0	1	0	10
Adults Reached	9	4	1	4	9
Children Reached	0	0	0	0	0
Individuals Assisted	10	4	1	4	10
Schools Reached	0	0	0	0	0
Stream Miles Improved	0	0	0	0	0
Media Outreach	0	0	0	0	0

### January 1 – March 31, 2018

ALLARM coordinated with the Westmoreland County Stream Team to plan and implement a stream monitoring workshop for new volunteers that the group recently recruited. ALLARM also helped an existing monitor choose a new site location.

### April 1 – June 30, 2018

ALLARM scheduled a follow-up meeting to reconnect with volunteers who were trained in February. ALLARM also helped a volunteer go over site selection and data management. ALLARM also provided quality control assistance to two volunteers who sent three water samples to ALLARM for duplicate sample analysis this quarter.

### July 1 – September 30, 2018

ALLARM conducted a follow-up meeting in Westmoreland County for newly-trained Allegheny County volunteers and had the opportunity to connect with one of the Westmoreland volunteers during that meeting in order to discuss the database and how data collection has been going.

### October 1 – December 31, 2018

ALLARM touched base with the monitoring program coordinator and two additional volunteers about monitoring and data management.

## **Assistance Reports**

### **Delaware Riverkeeper Network**

## Abington Lansdale Hospital

**River Basin:** Delaware  
**Watershed:** Neshaminy Creek (West Branch)  
**Watershed Size:**  
**County:** Montgomery Co.  
**Lead C-SAW Provider:** Delaware Riverkeeper Network  
**Type of Assistance Provided:** (Watershed-Specific Technical Assistance, Mentoring, QC, and/or Reporting)  
**Date of Initial Contact with Group:** 11/10/17  
**DEP Approval to Proceed Date:** 11/17/17  
**Date Assistance Began:** 11/17/17  
**Date Assistance Completed:** Ongoing  
**Total Cost of Assistance:** \$ 6564.5

### Overview of Assistance:

Approximate Group Membership: 300  
Total Number of Consultations Provided: 39  
Total Number of Trainings/Workshops Provided: 8  
Total Number of Individuals Assisted: 106  
Adults Reached: 109  
Children Reached: 60  
Schools Reached: 2  
Media Outreach: 4

### Assistance Provided Jan 1 to Mar 31, 2018

Field tours and planning to prioritize restoration projects suited for green stormwater and restoration projects was conducted this quarter. DRN prepared and presented an evening program for hospital staff, Hatfield Shade Tree Commission and the general public on non-point source pollution and retrofitting existing landscaping to achieve benefits of green stormwater. DRN began review of the municipalities Pollution Reduction Plan, a DEP MS4 requirement, and helping illustrate the economic value of better stormwater management. Projects are being planned for Fall 2018 and DRN is assisting with this work to determine high priority restoration areas.

### Assistance Provided April 1 to June 30, 2018

Follow up on the field tours, site visits and fall restoration plan were conducted. DRN provided additional support of the township's GSI sites Hatfield proposed in their PRP. A hospital staff tour was conducted in April to walk and measure and survey the site and to review the hospital's needs with the site as well as volunteer recruitment and maintenance of the planting over time.

### Assistance Provided July 1 to Sept. 30, 2018

Preparation for two public events coming up next quarter including a watershed education presentation at Abington-Lansdale Hospital and volunteer workday at the riparian buffer planting. Outreach to EAC, ShadeTree Commission, area colleges, high schools and scouting orgs occurred this quarter. Native plants were selected and ordered and coordination with the hospital ground staff and community continued to plan for the fall planting. A Treevitalize grant was successfully secured to assist with this community project to shade and restore a neglected headwater tributary. Plans are also underway to educate the public visiting the hospital to the benefits of riparian buffers and native plants. (See photos of planting day which occurred in early October but included here).

**Assistance Provided October 1 to Dec. 31, 2018**

This quarter included prep for a tree and shrub riparian buffer planting along the hospital. Several outreach presentations and press was conducted to generate interest in this riparian buffer project. The planting day in November was well attended and successful. DRN helped community with plant delivery, equipment, volunteer recruitment and volunteer coordination that day, and press outreach. Cooperation with Abington-Lansdale Hospital, the EAC, the local Shade Tree Commission, area colleges, high schools and scouting organizations occurred as part of this buffer project. Plans continue and are underway to educate the public visiting the hospital to the benefits of riparian buffers and native plants in hopes to expand the reach and awareness of healthy watershed and healthy lifestyles. Video and press coverage of the planting event were also conducted to generate interest in riparian buffers.

## **Bucks CCAP**

**River Basin:** Delaware  
**Watershed:** Multiple  
**County:** Bucks  
**Lead C-SAW Provider:** Delaware Riverkeeper Network  
**Type of Assistance Provided:** WSTA  
**Date of Initial Contact with Group:** 2/2015  
**DEP Approval to Proceed Date:** 11/15/2015  
**Date Assistance Began:** 11/15/2015  
**Date Assistance Completed:** Ongoing  
**Total Cost of Assistance:** \$ 1622.5

### **Overview of Assistance:**

Approximate Group Membership: 120  
Total Number of Consultations Provided: 13  
Total Number of Trainings/Workshops Provided: 2  
Total Number of Individuals Assisted: 340  
Adults Reached: 250  
Children Reached: 24  
Schools Reached: 12  
Media Outreach: 8

### **Assistance Provided January 1 to March 31, 2018**

Assistance this quarter involved macroinvertebrate sampling to document baseline conditions for several streams in the pathway to the PennEast pipeline route. This work was conducted largely in Monroe and Luzerne Counties. Several watershed associations requested this technical sampling work and were assisted and engaged to determine best sampling locations. DRN conducted the monitoring in late December and samples were sent off to a lab for analysis. This work also ties into anti-degradation work in the state. DRN also assisted with ideas for the Renewable Energy event planned for Palisades High School with the Earth Guardians School group. This annual and new event, largely planned by students, was spurred and planned last year with the gas build out and pipeline issues facing the Bucks County area to raise awareness of other technologies available for PA. Green roofs, solar, native plants, composting, recycling, water monitoring and other outings are included in the event that is held around Earth Day.

### **Assistance Provided April 1 to June 30, 2018**

Assistance this quarter involved follow up and analysis of macroinvertebrate sampling to document baseline conditions for several streams in the pathway to the PennEast pipeline route. Other assistance was around vernal pool recon and planning for more wetlands mapping by volunteer monitors for next season.



**Assistance Provided July 1 to Sept 30, 2018**

Assistance this quarter involved follow up and analysis of macroinvertebrate sampling to document baseline conditions for several streams in the pathway to the PennEast pipeline route. DRN provided information regarding another proposed pipeline – Adelphia Pipeline upon Bucks CCAP requesting assistance on this new project to educate the community. DRN continues to assist with volunteer monitoring component related to the proposed PennEast Pipeline. DRN also has through this community connection promised to do a Gardening for the River native plant presentation coming up later in the year with another Bucks County Group which may become another CSAW group in the future.

**Assistance Provided Oct 1 to Dec 31, 2018**

Assistance this quarter involved community support around the proposed Adelphia pipeline project. Bucks CCAP held information sessions for the public during this timeframe and DRN provided some information and comments in support of their outreach efforts. This quarter, through connections with this group, DRN also presented to a local Bucks Co garden club about river friendly gardens and how native plants can help improve water quality and benefit local pollinator populations. The presentation on River Friendly gardens was attended by 19 garden club members and as a result about 6 landowners have reached out to ask for technical assistance to help create River Friendly spaces on their properties. DRN continues to coordinate with the group regarding PennEast pipeline as well which is currently still deficient in its applications to the states of PA and NJ.

## **Crum Creek Neighbors/Darby Creek Valley Association**

**River Basin:** Delaware  
**Watershed:** Darby Creek  
**Watershed Size:** 77 square miles  
**County:** Delaware  
**Lead C-SAW Provider:** Delaware Riverkeeper Network  
**Type of Assistance Provided:** WSTA  
**Date of Initial Contact with Group:** 4/1/2018  
**DEP Approval to Proceed Date:** 10/1/2018  
**Date Assistance Began:** 10/1/2018  
**Date Assistance Completed:** Ongoing  
**Total Cost of Assistance:** \$ 4,543

### **Overview of Assistance:**

Approximate Group Membership: 600  
Total Number of Consultations Provided: 17  
Total Number of Trainings/Workshops Provided: 2  
Total Number of Individuals Assisted: 300  
Total Number of Stream Miles Improved or BMP's installed as a Result of C-SAW Assistance:  
Adults Reached: 120  
Children Reached:  
Schools Reached: 1  
Media Outreach: 1

### **Assistance Requested:**

Crum Creek neighbors requested assistance from DRN regarding preservation and protection of a headwater tributary of the Darby Creek watershed. The Darby Creek, highly urbanized, is prone to extreme flooding and the local community in Marple Township has been working to educate the public about an old growth forested UNT to Whetstone Creek and wetland complex that they would like to protect from developers who are proposing another shopping center. This request also ties into DCVA's efforts to upgrade a tributary to the Whetstone Creek and DRN was requested to help in that effort with comment. The potential developer of the property also hired a consultant to provide comment to the Department during the Whetstone petition process claiming economic hardship if HQ designation was granted.

### **Assistance Provided January 1 to March 31, 2018**

No record available this quarter.

### **Assistance Provided April 1 to June 30, 2018**

No record available this quarter.

### **Assistance Provided July 1 to Sept 30, 2018**

No record available this quarter.

### **Assistance Provided Oct 1 to Dec 31, 2018**

An MS4 workshop was held for the community to learn about how they can plug in and comment at the municipal level for MS4 plans. Other community groups who attended the workshop included: Save Marple Woods, Upper Darby EAC members, Upper Darby township council, and Darby Creek Valley Association, and many private residents. During this quarter, DRN assisted residents in the Whetstone creek watershed and DCVA with analysis and comment pertaining to a stream upgrade petition DCVA submitted to the Department. DRN assisted with community outreach and comment pertaining to preserving and protecting a forested area with wetlands and headwater tributaries in the Darby Creek's headwaters that is slated for potential development. Several township meetings were attended during this timeframe. Monitoring was also conducted on the threatened waterbody during this quarter and information was shared with the Department. There is pressure from the developer's consultant on the record to cite economic hardship if the petition were to come to fruition with a stream upgrade so the community is organizing to reflect values of preservation over those economic pressures. Some of this work is match time.

## **Friends of the John Heinz Refuge & Eastwick Neighbors Group**

**River Basin:** Delaware  
**Watershed:** Darby Creek  
**Watershed Size:** 77 square miles  
**County:** Delaware  
**Lead C-SAW Provider:** Delaware Riverkeeper Network  
**Type of Assistance Provided:** WSTA  
**Date of Initial Contact with Group:** 5/10/2012  
**DEP Approval to Proceed Date:** 5/23/2012  
**Date Assistance Began:** 6/1/2012  
**Date Assistance Completed:** Ongoing  
**Total Cost of Assistance:** \$ 4,086

### **Overview of Assistance:**

Approximate Group Membership: 400 residents and volunteers  
Total Number of Consultations Provided: 44  
Total Number of Trainings/Workshops Provided: 8  
Total Number of Individuals Assisted: 900  
Adults Reached: 540  
Children Reached: 10  
Schools Reached: 2  
Media Outreach: 2

### **Assistance Provided January 1 to March 31, 2018**

DRN continued assistance with the Eastwick community group through its regular meetings and its special dinner to bring together the community to recognize local leaders and businesses using sustainable water friendly practices to help reduce flooding in this flood prone region (Shop Rite was one of the honorees at this dinner). During this quarter 4 meetings and the dinner ceremony were attended and facilitated with help from DRN.

### **Assistance Provided April 1 to June 30, 2018**

As Eastwick and others look to upstream stormwater concerns, DRN began assisting other Darby Creek stakeholders pertaining to some proposed residential and commercial development impacts. Flooding documentation and stormwater monitoring were conducted as well as participation in several public meetings as requested by township supervisors concerned with some planned floodplain developments in the Darby Creek watershed. One project is proposed for redevelopment of a shopping center in the floodplain of Darby Creek. The other project pertains to 213 acre Archdiocese forest property in the Whetstone – a tributary to the Darby Creek. Technical assistance related to MS4 was requested. Requests will be submitted for additional work. Other community groups that received assistance related to this work include Save Marple Woods, Upper Darby EAC members, Upper Darby township council, and Darby Creek Valley Association.

### **Assistance Provided July 1 to Sept 30, 2018**

As Eastwick and others look to upstream stormwater concerns, DRN began assisting other Darby Creek stakeholders and community groups pertaining to proposed residential and commercial development impacts. Flooding documentation and stormwater monitoring were conducted as well as participation in several public meetings as requested by township supervisors concerned with some planned floodplain developments in the Darby Creek watershed. A field recon was conducted at the request of the community to document wetlands and

headwater tributary conditions. Technical assistance related to MS4 was requested and a workshop is being planned in the fall. Other community groups that received assistance related to this work include Save Marple Woods, Upper Darby EAC members, Upper Darby township council, and Darby Creek Valley Association. A new C-SAW request will be submitted to reflect these updates and additional work and groups gaining capacity.

### **Assistance Provided Oct 1 to Dec 31, 2018**

DRN helped organize and attended a public meeting led by the community regarding redevelopment in flood prone areas of Tinicum Township. DRN, through its work with the Eastwick group, assisted with talking point formation for public input regarding the proposed Eastwick Public Lands Strategy. The meeting was held on October 25, 2018 and over 200 residents attended - standing room only. The presentation focused on educating the community and asking questions like: Is it Eastwick's best interests to develop in a special flood hazard area? Are the right landuses proposed for the right places? Who benefits and who pays the costs in the proposed strategy?

## **The Lackawaxen River Conservancy, Pike TU, Damascus Citizens, Other Upper Delaware watershed monitors**

**Watershed:** Upper Delaware

**River Basin:** Delaware River Watershed

*County: Wayne, Pike Counties*

**Lead C-SAW Provider:** DRN

**DEP Approval to Proceed Date:** 12/17/09

**Date Assistance Began:** 12/1/09

**Type of Assistance Provided:** Watershed-Specific Technical Assistance

**Date Assistance Completed:**

**Approximate Group Membership:** 120

**Size of Watershed Assisted:** 598 sq. miles

**Total Cost of Assistance:** \$ 5521.5

### **Overview of Assistance:**

Approximate Group Membership: 3000

Total Number of Consultations Provided: 17

Total Number of Trainings/Workshops Provided: 7

Total Number of Individuals Assisted: 2,200

Size of Watershed Assisted: 598 sq miles

Total Number of Stream Miles Improved or BMP's Installed as a Result of C-SAW Assistance: NA

Adults Reached: 2,850

Children Reached: 390

Schools Reached: 13

Media Outreach: 35

### **Assistance Provided January 1 to March 31, 2018**

DRN continued assistance with data analysis and monitoring conducted regarding the Orion pipeline TGP project. DRN continued shale watch baseline monitoring assistance and also continued data dissemination in way of proposed regulations and submitted volunteer data report to the DRBC for consideration in the proposed gas drilling regulations. A report was provided to the DRBC utilizing all of the volunteer collected data under the shale watch program. DRN disseminated information and technical information regarding DRBC gas drilling regulations to the local groups and monitor groups to engage them in the review of the regulations and to conduct outreach to garner support for a drilling ban at the DRBC meetings and public testimony. As a result, the overwhelming public testimony at 5 public hearings called on the DRBC for a complete ban to gas drilling, including no acceptance of wastewater and no withdrawals of freshwater from the Delaware River Basin to frack elsewhere. Volunteer monitors attended these hearings to testify and share their insights. (much of this work was not conducted under CSAW time).

### **Assistance Provided April 1 to June 30, 2018**

Work this quarter was around the Upper Delaware Bioblitz event held June 29 and 30 in Starlight, PA (Wayne County). DRN sat in on regular planning meetings with volunteers to put on and plan the event. DRN led the macroinvertebrate team for surveys conducted with volunteers and other staff. DRN also held a workshop on volunteer monitoring of which about 15 people attended. DRN helped compile the final list of benthics for the count. Data is being used on various fronts. This is a collective effort by a large coalition of Upper Delaware

partners and groups. DRN also provided videos about the event to help share information and advertise in the local community to attend the Blitz. Nine teams of scientists were a part.

### **Assistance Provided July 1 to Sept 30, 2018**

Work this quarter was around follow up to the Upper Delaware Bioblitz event held June 29 and 30 in Starlight, PA (Wayne County). DRN helped compile the final list of benthics for the count and disseminate information and diversity stats on social media. Data are being used on various fronts. The Bioblitz is a collective effort by a large coalition of Upper Delaware partners and groups. DRN also provided videos about the event to help share information and advertise in the local community to attend the Blitz. Nine teams of scientists were a part. In addition, this quarter, pollution hotline work from volunteer monitor reports pertaining to the TGP Orion pipeline was conducted.

### **Assistance Provided Oct 1 to Dec 31, 2018**

DRN assisted local groups with planning for farmers market outreach around Our Pocono Waters (OPW) campaign to highlight the benefits of Exceptional Value and High Quality streams in the region. This campaign to highlight our special protection watersheds was spearheaded after developers in the Upper Delaware began an attempt to undermine and challenge the re-designation process citing HQ and EV would limit the amount of money they can make when they are paving and developing their projects. OPW's goal is to outreach to the community, local leaders, and elected officials of the Poconos why clean streams should be protected and how protecting them helps benefit all.

## **Lebanon and Schuylkill Pipeline Awareness, Lancaster Against Pipelines and Martic SOUL**

**River Basin:** Delaware  
**Watershed:** Schuylkill River Basin  
**County:** Schuylkill and Lebanon Counties  
**Lead C-SAW Provider:** Delaware Riverkeeper Network  
**Type of Assistance Provided:** Mentoring  
**Date of Initial Contact with Group:** 10/20/14  
**DEP Approval to Proceed Date:** 10/27/14  
**Date Assistance Began:** 10/20/14  
**Date Assistance Completed:** Ongoing  
**Total Cost of Assistance:** \$ 3097.5

### **Overview of Assistance:**

Approximate Group Membership: 160  
Total Number of Consultations Provided: 57  
Total Number of Trainings/Workshops Provided: 10  
Total Number of Individuals Assisted: 400  
Adults Reached: 190  
Children Reached: 12  
Schools Reached: 2  
Media Outreach: 6

### **Assistance Provided January 1 to March 31, 2018**

Various work continued as construction continues along the pipeline. As a result of initial trainings, another training was requested by Martic SOUL to expand the vol monitoring network watchdogging the construction of the atlantic sunrise pipeline. DRN continued to assist concerned landowners after the volunteer monitor trainings held last year as data began streaming in. DRN has conducted pipeline monitoring with new volunteers during the winter months especially in steeply sloped and sensitive areas where access is possible. DRN continues to share resources with the community groups posted to the FERC docket and the pipeline portal. Volunteer coordinators for various groups continue to train new volunteer monitors and house the data and photographs on online google drives. As a result of this monitoring, a multitude of violations are being documented along the pipeline construction route and volunteer monitors continue to alert PADEP and the Conservation Districts and FERC project inspectors when E&S or other violations are being documented by the agencies. Media has been part of this work to amplify the issues surrounding these large pipeline projects. Pipeline monitoring data are also being used by DRN on multiple fronts to call for better stream protections.

### **Assistance Provided April 1 to June 30, 2018**

DRN continued to assist concerned landowners after the volunteer monitor trainings held last year as data began streaming in. DRN has conducted pipeline monitoring and field trainings with new volunteers especially in steeply sloped and sensitive areas where access is possible. DRN continues to share resources with the community groups posted to the FERC docket and the pipeline portal. Volunteer coordinators for various groups continue to train new volunteer monitors and house the data and photographs on online google drives. Weld breaches and report of weld breaches that were later cited by PHMSA were documented in April. With heavy rains and flash floods many exceedances and violations are occurring along the construction route. As a result of this monitoring, a multitude of violations are being documented along the pipeline construction route and volunteer monitors continue to alert PADEP and the Conservation Districts and FERC project inspectors when E&S or other



violations are being documented by the agencies. Pipeline monitoring data are also being used by DRN on multiple fronts to call for better stream protections and to assist landowners along the route. DRN also conducted file reviews this quarter pertaining to violations along the route.

### **Assistance Provided July 1 to Sept 30, 2018**

DRN continued to assist concerned landowners and volunteer monitors conducting pipeline investigations and monitoring. DRN has conducted pipeline monitoring and field trainings with new volunteers especially in steeply sloped and sensitive areas where access is possible. As a result of this monitoring, a multitude of violations are being documented along the pipeline construction route and volunteer monitors continue to alert PADEP and the Conservation Districts and FERC project inspectors when E&S or other violations are being documented by the agencies. Pipeline monitoring data are being used by the local groups and DRN on multiple fronts to call for better stream protections and to assist landowners along the route. DRN also conducted file reviews this quarter pertaining to violations along the pipeline route to share with community.

### **Assistance Provided Oct 1 to Dec 31, 2018**

DRN continues to assist concerned landowners and volunteer monitors conducting pipeline investigations and monitoring in Schuylkill, Carbon, Lancaster, and Lebanon counties primarily along the ASP pipeline. As a result of this monitoring, a multitude of violations are being documented along the pipeline construction route and DRN helps volunteer monitors continue to alert PADEP and the Conservation Districts and FERC project inspectors when E&S or other violations are being documented by the agencies. Pipeline monitoring data are being used by the local groups and DRN on multiple fronts to call for better stream protections and to assist landowners along the route. DRN was also contacted by concerned residents regarding a potential new compressor that is slated for Schuylkill County already to be placed along the new ASP route. This pipeline began running gas October 8, 2018.

## **New Group – Lehigh Gap Nature Center**

**River Basin:** Delaware  
**Watershed:** Lehigh River  
**Watershed Size:**  
**County:** Lehigh Co.  
**Lead C-SAW Provider:** Delaware Riverkeeper Network  
**Type of Assistance Provided:** (Watershed-Specific Technical Assistance, Mentoring, QC, and/or Reporting)  
**Date of Initial Contact with Group:** 12/4/17  
**DEP Approval to Proceed Date:**  
**Date Assistance Began:** 12/7/18  
**Date Assistance Completed:** On-Hold  
**Total Cost of Assistance:** \$ 486

### **Overview of Assistance:**

Approximate Group Membership: 300  
Total Number of Consultations Provided: 4  
Total Number of Trainings/Workshops Provided: 1  
Total Number of Individuals Assisted: 20  
Adults Reached: 8  
Children Reached: 0  
Schools Reached: 0  
Media Outreach: 0

### **Assistance Provided Jan 1 to Mar 31, 2018**

This request came into the partners late last year – USGS and Stroud could not assist. DRN restoration staff inquired with the Lehigh Gap Nature Center’s Dan Kunkle and on March 1 visited the Center to provide technical assistance to the group and other contacts in the region related to restoration work that the nature center is planning. DRN shared grant resources that may help with nature center projects.

### **Assistance Provided April 1 to June 30, 2018**

DRN completed assistance with the group this quarter and provided next steps in way of potential grant funding for restoration. Dan Kunkle will keep us apprised if we can be of further help. Wildlands Conservancy is another logical partner in the region who may also be willing to assist.

### **Assistance Provided July 1 to Sept. 30, 2018**

No record available this quarter.

### **Assistance Provided October 1 to Dec. 31, 2018**

No record available this quarter.

## Middletown Coalition for Community Safety

**Applicant (new or continuing):** Continuing

**River Basin:** Delaware

**Watershed:** Multiple: Chester Creek, Ridley Creek,

**Watershed Size:** 1,912 square miles

**County:** Delaware

**Lead C-SAW Provider:** Delaware Riverkeeper Network

**Type of Assistance Provided:** (Watershed-Specific Technical Assistance, Mentoring, QC, and/or Reporting)

**Date of Initial Contact with Group:** 6/2017

**DEP Approval to Proceed Date:** 7/1/2017

**Date Assistance Began:** 7/1/2017

**Date Assistance Completed:** Ongoing

**Total Cost of Assistance:** \$ 2654.75

### Overview of Assistance:

Approximate Group Membership: 300

Total Number of Consultations Provided: 37

Total Number of Trainings/Workshops Provided: 9

Total Number of Individuals Assisted: 129

Adults Reached: 129

Children Reached: 10

Schools Reached: 4

Media Outreach: 8

### Assistance Provided Jan 1 to Mar 31, 2018

DRN continued to provide assistance to local residents with concerns on the Mariner 2 pipeline project, particularly in Delaware County as well as farther west along the route. DRN worked with Stroud and a local homeowners association to deploy a Mayfly DIY probe downstream of the pipeline ROW where repeated HDD issues and violations were occurring during construction of the pipeline. Several sites were investigated for deployment as part of the selection process. The Mayfly automatic logger will assist and supplement with spot checks and volunteer monitoring of the pipeline construction practices logging turbidity, conductivity and water temperature. DRN staff conducted periodic field visits for maintenance of the probe, after hotline calls and pollution events particularly – volunteer monitors participated when available. Information was filed with the Conservation Districts and FERC. DRN continued to assist on recruiting volunteer monitors along hot spots in the area where steep slopes and bentonite releases were reported. Much of this time was match under a grant for the sensor administered by Stroud. DRN also provided monitor tips and information at the request of the group to allies working on monitoring the Bayou Pipeline in the southern states via a conference call on January 11, 2018.

### Assistance Provided April 1 to June 30, 2018

DRN continued to provide assistance to local residents with concerns on the Mariner 2 pipeline project, particularly in Delaware County as well as farther west along the route. DRN monitored and maintained with residents, a Mayfly DIY sensor placed in Chester Creek to document construction impacts. DRN helped summarize visual assessments and data to the Conservation District and the DEP during this time to document violations.

**Assistance Provided July 1 to Sept 30, 2018**

DRN continued to provide assistance to local residents with concerns on the Mariner 2 pipeline project. Several field visits were conducted at problem pollution sites. Most concerns dealt with HDD issues and failing sediment controls along the pipeline route. Some follow up with the local community monitor groups in Lebanon County and direct contact with impacted landowners occurred this quarter. Guidance was provided regarding restoration and planting recommendations for a homeowners association in Delaware County.

**Assistance Provided Oct 1 to Dec 31, 2018**

DRN continued to provide assistance to local residents with concerns about Sunoco's Mariner 2 pipeline construction project. Several field visits were conducted at problem pollution sites along the pipeline route. Volunteer monitors continue to share field photos and video of construction concerns with DRN. Most concerns dealt with HDD IR issues and failing sediment controls along the pipeline route. Some follow up with the local community monitor groups in Lebanon County, Delaware County, and Berks County and direct contact with impacted landowners occurred this quarter. Guidance was provided regarding restoration and native vegetation planting recommendations for a homeowners association in Delaware County.

## **Morrisville Borough and Morrisville EAC**

**Applicant (new or continuing):** Continuing  
**River Basin:** Delaware River Watershed  
**Watershed:** Delaware River Main Stem  
**Watershed Size:** 13,000 sq miles  
**County:** Bucks  
**Lead C-SAW Provider:** DRN  
**Type of Assistance Provided:** WSTA  
**Date of Initial Contact with Group:**  
**Date of Scoping Meeting:** 2/15/2011  
**DEP Approval to Proceed Date:** 3/1/2011  
**Date Assistance Began:** 3/1/2011  
**Date Assistance Completed:** ongoing  
**Total Cost of Assistance:** \$ 900

Approximate Group Membership: 10,023  
Total Number of Consultations Provided: 7  
Total Number of Trainings/Workshops Provided: 0  
Total Number of Individuals Assisted: 30  
Size of Watershed Assisted: multiple  
Total Number of Stream Miles Improved or BMP's Installed as a Result of C-SAW Assistance: 1 acre  
Adults Reached: 24  
Children Reached: 0  
Schools Reached: 0  
Media Outreach: 0

### **Assistance Provided January 1 to March 31, 2018**

The local EAC is pursuing supplements to the existing riparian buffer projects that came about from subsequent technical assistance to enhance wildlife value in the buffer. DRN is providing some oversight on that planned work and coordinating with EAC members regularly. Restoration assistance is also being conducted with the Yardley EAC and the Stone Meadow Farm. Additional requests may be pursued depending on extent of assistance needed.

### **Assistance Provided April 1 to June 30, 2018**

The local EAC is pursuing supplements to the existing riparian buffer projects and maintenance of these projects over time. DRN is providing some oversight and field guidance and coordinating with EAC members regularly. Restoration assistance is being conducted with the Yardley EAC and the Stone Meadow Farm.

### **Assistance Provided July 1 to Sept. 30, 2018**

The local EAC is pursuing supplements to the existing riparian buffer projects and maintenance of these projects over time. DRN is providing oversight and field guidance and coordinating with EAC members regularly. A fall planting is being planned for this year and DRN is assisting. Restoration assistance is being conducted with the Yardley EAC and the Stone Meadow Farm as well.

**Assistance Provided Oct 1 to Dec. 31, 2018**

DRN provided minimal assistance this quarter pertaining to follow up on riparian restoration recommendations and maintenance.

## Pennsylvania Sierra Club

**Applicant (new or continuing):** Continuing

**River Basin:** Delaware

**Watershed:** Schuylkill River

**Watershed Size:** 1,912 square miles

**County:** Philadelphia

**Lead C-SAW Provider:** Delaware Riverkeeper Network

**Type of Assistance Provided:** (Watershed-Specific Technical Assistance, Mentoring, QC, and/or Reporting)

**Date of Initial Contact with Group:** 3/3/2017

**DEP Approval to Proceed Date:** 5/30/2017

**Date Assistance Began:** 5/11/2107

**Date Assistance Completed:** Ongoing

**Total Cost of Assistance:** \$767

### Overview of Assistance:

Approximate Group Membership: 3000

Total Number of Consultations Provided: 7

Total Number of Trainings/Workshops Provided: 1

Total Number of Individuals Assisted: 80

Adults Reached: 90

Children Reached: 2

Schools Reached: 0

Media Outreach: 1

### Assistance Provided Jan 1 to Mar 31, 2018

DRN is assisting with outreach and dissemination of the renewable 100% campaign. DRN is assisting with work and outreach related to pipeline monitoring of Williams Transco Atlantic Sunrise pipeline – several sierra club members attended pipeline watch trainings conducted this quarter with multiple groups. (much of this work is match time)

### Assistance Provided April 1 to June 30, 2018

DRN is assisting with outreach and dissemination of the renewable 100% campaign. DRN is assisting with work and outreach related to pipeline monitoring of Williams Transco Atlantic Sunrise pipeline – several sierra club members attended pipeline watch trainings conducted this quarter with multiple groups. (much of this work is match time)

### Assistance Provided July 1 to Sept 30, 2018

DRN continues to assist with work and outreach related to pipeline monitoring of Williams Transco Atlantic Sunrise pipeline in way of follow up on pollution events and steps to better advocate for restoration/remediation of the pipeline route for landowners who have had pollution events from the pipeline construction on their property (much of this work is match time). With company hold ups, bad welds, bankruptcy and other issues during construction, it appears that the company is pushing for much of the restoration of the pipeline will occur by the company after winter and into the spring of

2019. Unfortunately, in the past, DRN and volunteer monitors has observed lagging pollution problems when similar pipelines restoration schedules were delayed by the company - we anticipate volunteer monitors will continue to ID problems through the winter if this is allowed to be the case for ASP and the company is approved to hold off on final remediations.

**Assistance Provided Oct 1 to Dec 31, 2018**

No record available this quarter.



## Springfield Township EAC

**Applicant (new or continuing):** Continuing

**River Basin:** Delaware

**Watershed:** Schuylkill River Watershed with small portions in the Tookany

**Watershed Size:** 1,912 square miles (Schuylkill Watershed)

**County:** Montgomery

**Lead C-SAW Provider:** Delaware Riverkeeper Network

**Type of Assistance Provided:** (Watershed-Specific Technical Assistance, Mentoring, QC, and/or Reporting)

**Date of Initial Contact with Group:** 4/24/2017

**DEP Approval to Proceed Date:** 6/6/2017

**Date Assistance Began:** 4/24/2017

**Date Assistance Completed:** Ongoing

**Total Cost of Assistance:** \$2360.5

### Overview of Assistance:

Approximate Group Membership: 19,418 (township population)

Total Number of Consultations Provided: 17

Total Number of Trainings/Workshops Provided: 5

Total Number of Individuals Assisted: 80

Adults Reached: 61

Children Reached: 0

Schools Reached: 4

Media Outreach: 4

### Assistance Provided Jan 1 to Mar 31, 2018

DRN helped the EAC conduct a file review on the PRP. Outreach assistance was also conducted this quarter to educate the public in the township about the importance of green infrastructure projects along known flood prone areas and riparian areas. A tour is being planned for the spring and preliminary field visits have been conducted with the EAC to decide on priority locations where restoration projects could benefit the township, minimize flooding and assist with natural restoration.

### Assistance Provided April 1 to June 30, 2018

Outreach assistance continued and was conducted this quarter to educate the public in the township about the importance of green infrastructure projects along known flood prone areas and riparian areas. Final prep for tour, including event media outreach, researching specific contractor that installed township's green roof, handouts, etc. Conducted tour with 8 area residents including Township Councilman, EAC and STC members and 3 local residents. Visited 9 specific sites highlighting the good, bad and ugly in terms of stormwater management. Highlighted "low hanging fruit" in terms of stormwater projects that could relatively easily be implemented with little expense (e.g. establishing No Mow areas and buffer plantings, educational outreach materials on residential raingardens and rain barrels to a specific neighborhood that drains directly into Paper Mill Run). Discussed newly installed green roof on Twp. building that tour participants had never seen before, including the underground storage and sediment collection system at the new municipal complex. Participants were happy to see

their local government being pro-active. Finally, one of the tour attendees was actually an engineer for the Corps and one of the concrete channel sites on tour that has totally devastated this tributary of Paper Mill Run suggested that it may be appropriate for a Corps' Rivers grant (205 Program) to study impacts of dismantling the concrete channel to re-connect creek to floodplain and infiltration. DRN will continue to follow up on this idea.

### **Assistance Provided July 1 to Sept 30, 2018**

Follow-up from the watershed stormwater and flooding driving tour that was held last quarter continued. DRN coordinated with EAC members on potential stormwater management project for area volunteers to continue work and education outreach. DRN followed up with the Corps who attended the tour regarding one of the concrete channel sites on tour that has devastated this tributary of Paper Mill Run. The tour participant suggested that it may be appropriate for a Corps' Rivers grant (205 Program) to study impacts of dismantling the concrete channel to re-connect creek to floodplain and allow for infiltration. DRN will continue to follow up on this restoration idea with the community.

### **Assistance Provided Oct 1 to Dec 31, 2018**

Follow-up from the watershed stormwater and flooding driving tour that was held earlier in the year continued. DRN assisted the community and the local EAC to pursue a TreeVitalize proposal to work on restoration to improve stormwater conditions at a location identified during the driving tour earlier in the year. A presentation to the community was conducted.

## **Applicant: The Tinicum Conservancy/Swamp Creek/Tohickon**

**River Basin:** Delaware River Basin  
**Watershed:** Swamp Creek - Roaring Rocks Watershed (State Water Plan 2D)  
**County:** Bucks  
**Lead C-SAW Provider:** Delaware Riverkeeper Network  
**Type of Assistance Provided:** WSTA  
**DEP Approval to Proceed Date:** 3/28/13 (this group is a historic assisted group now requiring more assistance)  
**Date Assistance Began:** 3/15/13  
**Date Assistance Completed:** Ongoing  
**Total Cost of Assistance:** \$ 1,534

### **Overview of Assistance:**

Approximate Group Membership: 2,300  
Total Number of Consultations Provided: 17  
Total Number of Trainings/Workshops Provided: 2  
Total Number of Individuals Assisted: 500  
Adults Reached: 101  
Children Reached: 0  
Schools Reached: 0  
Media Outreach: 1

### **Assistance Provided January 1 to March 31, 2018**

DRN coordinated with Tinicum Conservancy regarding conservation easements and water qualifiers for the triennial review. DRN disseminated information to groups to engage them in this process. As a result, land conservancies are weighing into water quality standards reviews and an extension of comment was granted on the triennial review. DRN and land conservancies attended the additional public hearing held in the Delaware River watershed in Norristown that was also granted after we made the request for more time and an additional hearing. In addition, PALTA has taken a stand and prepared comment on stream upgrades and easements as part of the record – submitted by Tinicum Conservancy. As a build out on this issue, DRN and Tinicum Conservancy co-presented at the Schuylkill Congress on the importance of EV and HQ streams and land conservation. About 45 people attended the session and as a result a meeting with DCNR is being planned. This topic is also part of the CCW EV work group team.

### **Assistance Provided April 1 to June 30, 2018**

Restoration helped with ongoing restoration projects in May of this quarter. Some coordination and follow up on land preservation project pertaining to stream redesignation petitions was pursued this quarter as follow up to the Congress and other Pennsylvania CCW EV team work group activities to bring in more land trusts to understand stream designations.

### **Assistance Provided July 1 to Sept 30, 2018**

DRN continues to assist with stream redesignation work and historic structure assistance on a regular basis.

### **Assistance Provided Oct 1 to Dec 31, 2018**

No record available this quarter.

### **Other Assistance from January 1 to March 31, 2018**

- Preliminary outreach to possible future CSAW groups
- C-SAW reporting
- Schuylkill Congress presentations to multiple watershed groups and community leaders – March 10, 2018
- Initial help provided to Indian Creek and St Mary's Property regarding stormwater
- Upper Delaware Bioblitz organizers have requested CSAW monitoring assistance for the June 2018 BioBlitz to be held in Starlight, PA (Wayne County)

### **Other Assistance from April 1 to June 30, 2018**

- Preliminary outreach to possible future CSAW groups
- C-SAW reporting
- Save Marple Woods, Breathe Easy Susquehanna County, and a few other potential groups were assisted

### **Other Assistance from July 1 to Sept 30, 2018**

- Preliminary outreach to possible future CSAW groups – Newlin Grist Mill, Reading Area Community College
- C-SAW reporting and meetings
- Coordinating with future work and groups

### **Other Assistance from Oct 1 to Dec 31, 2018**

- Preliminary outreach to possible future CSAW groups – garden club, Upper Merion, Hawk Mountain, Toms Creek WA, Little Swatara Creek WA, state park annual spring workshop, PSU well water outreach
- C-SAW reporting and meetings – new format for billing
- DRN conducted a presentation on water quality and the Schuylkill River at the request of Michael Feyer's who teaches the Honors Environmental Science class through the Science, Technology, Engineering, Mathematics (STEM) program on October 4, 2018. DRN had presented in past years and we were requested back to speak to a new batch of students

## **Assistance Reports**

### **Pennsylvania Lake Management Society**

## Glade Run Lake Conservancy

Organization Information		Assistance Information	
New group?	No	Date of initial contact	3/2/17
Group membership	1900	Date of scoping meeting	6/21/18
Watershed name	Glade Run	Date approved by PA DEP	9/10/18
Watershed size	3.3 sq miles	Date assistance began	6/21/18
County	Butler	Date assistance ended	
In-kind match		Cost of assistance	Est \$2755

The following assistance was provided by [Enter organization name here]:

	Watershed-Specific Technical Assistance	Mentoring	Quality Control
Assistance Type		x	

	Jan – Mar	Apr – Jun	Jul – Sep	Oct – Dec	Total
Consultations					
Trainings & Workshops					
Workshop Attendance					
Adults Reached					
Children Reached					
Individuals Assisted					
Schools Reached					
Stream Miles Improved					
Media Outreach (Articles, TV, etc.)					

### January 1 – March 31, 2018

PALMS received an application on 3/22/18 from Glade Run Lake Conservancy and began internal review process of the application on 3/26/18. PALMS approved to move ahead with seeking approval for assistance to GRLC.

### April 1 – June 30, 2018

PALMS attended scoping/planning meeting with partners of GRLC on 6/7/18. PALMS worked with GRLC to develop assistance plan and proposed budget.

### July 1 – September 30, 2018

PALMS continued working with GRLC to develop assistance plan and proposed budget. PALMS requested project approval from NRCS and DEP. On 9/10/18 DEP approved the proposed project for mentoring assistance.

**Throughout the year:**

PALM's Executive Director, Kerilynn Frey, performed general CSAW Coordination such as reviewing requests, presenting to the PALMS Board of Directors, assisting applicants with the process, etc.

PALMS Treasurer, Gretchen Schatschneider, completed any invoices and payments on behalf of PALMS, presented CSAW information at the PALMS Board of Directors Meetings, discussed potential CSAW applications and projects with various Lake Association members, and attended regular CSAW meetings.

**Jan-March**

PALMS presented the CSAW program at the PALMS 2018 Annual Conference to promote it provided printed materials for it as well.

Bradford County Conservation District (BCCD) conducted two (2) pond and lake workshops for lakeside residents and pond owners. They also printed and distributed a Lake and Pond Newsletter.

**April-June**

Mercer County Conservation District – The MCCD has completed the development and presentation of a program series delivered to the public an educational series on watershed health, watershed management, and other water quality topics.

**July-Sept**

Scoping meeting with Glade Run Conservancy, at their invitation, to discuss a program to assess current nutrient loading to Glade Run Lake. PALMS representative compiled a list of sampling and analysis equipment for the project that included suppliers, catalog numbers, and list prices.

## **Assistance Reports**

### **Stroud Water Research Center**



## **Applicant: Sierra Club of Philadelphia**

**Applicant (new or continuing):** NEW

**River Basin:** Delaware

**Watershed:** Neshaminy and Lower Tidal Schuylkill

**Watershed Size (acreage or sq. miles):**

**County (multiple):** Philadelphia and Bucks.

**Lead C-SAW Provider:** Stroud Water Research Center

**Type of Assistance Provided:** Training in monitoring of stream chemistries, E.coli, and macroinvertebrates.

**Date of Initial Contact with Organization:** May 9, 2017

**DEP Approval to Proceed Date:** Request approved 6/22/2017

**Date Assistance Began:** 1JUL17 (1<sup>st</sup> workshop; attendees)

**Date Assistance Completed:** March 12, 2018

**Total Cost of Assistance:** ~ \$2190.00

**In-kind/Match Provided by Applicant Organization:** yes

### **Overview of Assistance:**

Approximate Group Membership:

Total Number of Consultations Provided: multiple emails and phone calls, 1 macroinvertebrate ID and monitoring workshop at Stroud Water Research Center for March 10<sup>th</sup>

Total Number of Trainings/Workshops Provided: 1

Total Number of Individuals Assisted: 19

Size of Watershed Assisted:

Total Number of Stream Miles Improved or BMP's installed as a result of C-SAW Assistance:

## **Project Summary**

A full day workshop on biological monitoring monitoring with the Leaf Pack Network was held at Stroud Water Research Center for Sierra Club members of Philadelphia and Bucks Counties on 10 March, 2018. 19 people were in attendance.

## **Applicant: Bartram's Garden**

**River Basin:** Delaware

**Watershed:** Schuylkill

**Watershed Size (acreage or sq. miles):**

**County (multiple):** Delaware/Philadelphia County

**Lead C-SAW Provider:** Stroud Water Research Center

**Type of Assistance Provided:** technical assistance monitoring and workshops

**Date of Initial Contact with Organization:** September 2017

**DEP Approval to Proceed Date:** 16 March, 2018

**Date Assistance Began:** October 1, 2017

**Date Assistance Completed:** ongoing

**Total Cost of Assistance:** ~\$3500

**In-kind/Match Provided by Applicant Organization:** no

Stroud Center staff visited Bartram's Garden (<http://bartramsgarden.org/>) in October, 2017 to discuss potential technical assistance for establishing a water quality monitoring program with staff at the Garden. Follow-up assistance was requested in February 2018 to help install EnviroDIY datalogging sensors in the Schuylkill River to monitor water depth, dissolved oxygen, turbidity, temperature, and conductivity to help with their critical need is to assess risk of bacteria contamination for the “on-the-water” boating and education programs. Several Stroud Staff member’s performed recon in April 2018 and then helped Bartram’s Garden staff build and deploy a sensor station in June 2018. The sensor station online data stream can be accessed here:

[http://drwisensors.dreamhosters.com/charts\\_main\\_SL176.php](http://drwisensors.dreamhosters.com/charts_main_SL176.php)

## **Applicant: Berks County Master Watershed Stewards**

**Applicant (new or continuing):** New

**River Basin:** Wyomissing Creek

**Watershed:** Wyomissing/Schuylkill

**Watershed Size (acreage or sq. miles):**

**County (multiple):** Berks

**Lead C-SAW Provider:** Stroud Water Research Center

**Type of Assistance Provided:** Advice on river restoration repair/re-do of a failed project implemented 15 years ago

**Date of Initial Contact with Organization:** May 16, 2018

**DEP Approval to Proceed Date:** 6/4/2018

**Date Assistance Began:** May 16, 2018

**Date Assistance Completed:** ongoing

**Total Cost of Assistance:** ~\$2000

**In-kind/Match Provided by Applicant Organization:** no

### **Overview of Assistance:**

Approximate Group Membership:

Total Number of Consultations Provided: 1

Total Number of Trainings/Workshops Provided:

Total Number of Individuals Assisted: 3

Size of Watershed Assisted:

Total Number of Stream Miles Improved or BMP's installed as a result of C-SAW Assistance:

## **Project Summary**

This Master Watershed Stewards group had Dr. Melinda Daniels, Associate Research Scientist of the Stroud Center's Fluvial Geomorphology Lab, visit the site of a failed river restoration project on Wyomissing Creek and give them advice on how to proceed going forward. Dr. Daniels visited the site located adjacent to the Reading Public Museum and contained within Museum Park and met with three individuals from the Master Watershed Stewards program. They asked questions about the current state of the river, explained details of past restoration efforts, and asked Dr. Daniels to write a short advisory report containing recommendations for future restoration efforts. The report is forthcoming.

## **Applicant: Hemlock Farms Conservancy**

**Applicant (new or continuing):** NEW

**River Basin:** *Upper Delaware River*

**Watershed:** *Shohola Creek, Bushkill Creek*

**Watershed Size (acreage or sq. miles):**

**County(ies):** *Pike*

**Lead C-SAW Provider:** Stroud Water Research Center

**Type of Assistance Provided:** Informative presentation on stream ecology, the needs of a healthy stream, approaches to monitoring, training on how to monitor with aquatic macroinvertebrates, guidance on experimental design and analysis.

**Date of Initial Contact with Organization:** February 15, 2018

**DEP Approval to Proceed Date:** 6/4/2018

**Date Assistance Began:** 3/18/18 (with scoping meeting)

**Date Assistance Completed:** ongoing

**website:** <https://www.hemlockfarmspacommunity.com/conservancy>

**Total Cost of Assistance:** ~\$2000 (but ongoing)

## **Project Summary**

**Please explain the following briefly (200 words or less)**

The Hemlock Farms Conservancy is a 501(c)(3) tax-exempt organization. Their mission is to protect, preserve, conserve and sustain the water, air, land, forest, wildlife, and other natural resources of Hemlock Farms and its environs in partnership with Hemlock Farms Community Association Members. They requested assistance to create an aquatic macroinvertebrate monitoring effort with local scout troops in the streams that run through the community of Hemlock Farms, and wish to be trained in the Leaf Pack Network protocols.

The Conservancy requested consultation with Tara Muenz, Assistant Director of Education, for services including a presentation on March 18<sup>th</sup> at their mini symposium, dedicated to educating community members as well as the Conservancy's board. Their goal is to engage community members in more active roles within their watershed through biological monitoring with the leaf pack network. Additionally, a 1-day leaf pack training with stream chemistry will be the next step with future assistance for experimental design and data interpretation also requested.

**STATUS:** This project only included scoping as further activities are on hold at this time.

## **Applicant: Pennsylvania Association of Environmental Educators**

**Applicant (new or continuing):** Continuing

**River Basin:** statewide

**Watershed:** statewide

**Watershed Size (acreage or sq. miles):**

**County (multiple):** statewide

**Lead C-SAW Provider:** Stroud Water Research Center

**Type of Assistance Provided:** Training workshops at conference

**Date of Initial Contact with Organization:**

**DEP Approval to Proceed Date:** 3/5/2018

**Date Assistance Began:** March 2018

**Date Assistance Completed:**

**Total Cost of Assistance:** ~\$2900

**In-kind/Match Provided by Applicant Organization:**

### **Overview of Assistance:**

Approximate Group Membership: 150

Total Number of Consultations Provided:

Total Number of Trainings/Workshops Provided:

Total Number of Individuals Assisted:

Size of Watershed Assisted:

Total Number of Stream Miles Improved or BMP's Installed as a result of C-SAW Assistance:

## **Project Summary**

The Pennsylvania Association of Environmental Educators is a non-profit which supports the community of environmental educators throughout Pennsylvania. One way in which this goal is accomplished, is through facilitating trainings for their membership. District watershed specialists, citizen monitors, state park naturalists, teachers are just a few types of audiences this organization serves.

The Stroud Center was invited to their annual conference (located in State College, PA) to lead two sessions on streamside forest restoration and monitoring and on the EnviroDIY stream sensor opportunities available with the Mayfly logger.

Assistance Provided-March 12-13, 2018 at Toftrees Golf Resort in State College, PA

## **Applicant: PA Trout Unlimited**

**Applicant (new or continuing):** New

**River Basin:** Statewide

**Watershed:** Statewide

**Watershed Size (acreage or sq. miles):**

**County (multiple):** Statewide

**Lead C-SAW Provider:** Stroud Water Research Center

**Type of Assistance Provided:** Presentation at 2018 Eastern Regional Training for PA Trout Unlimited Chapter Leaders about training workshops and other services Stroud Center can provide to Trout Unlimited Chapters in PA as part of C-SAW.

**Date of Initial Contact with Organization:**

**DEP Approval to Proceed Date:** January 16, 2018- sent notice to Steve.

**Date Assistance Began:** Jan. 9, 2018

**Date Assistance Completed:** Feb. 3, 2018

**Total Cost of Assistance:** ~\$1400

### **Overview of Assistance:**

Approximate Group Membership:

Total Number of Consultations Provided:

Total Number of Trainings/Workshops Provided:

Total Number of Individuals Assisted:

Size of Watershed Assisted:

Total Number of Stream Miles Improved or BMP's installed as a result of C-SAW Assistance:

### **Project Summary**

PA Trout Unlimited State Program Director Tali MacArthur invited Stroud Center Assistant Director of Education, Tara Muenz, to give a presentation to attendees (representing about 20 chapters in PA), on the C-SAW related services and programs Stroud Center staff can provide to TU chapters or partner with TU chapters to coordinate and implement. Such programs included those related to youth and chapter member environmental education and outreach, stream monitoring and evaluation, stream restoration design, and other guidance to help chapters protect, preserve, and conserve cold water resources in PA.

## **Applicant: Renfrew Institute**

**Applicant (new or continuing):** New

**River Basin:** Potomac

**Rivers:** Antietam Creek (East or West Branch in PA)

**Watershed:** Antietam Creek/Potomac River/Chesapeake Bay

**Watershed Size (acreage or sq. miles):**

**County (multiple):** Franklin

**Lead C-SAW Provider:** Stroud Water Research Center

**Type of Assistance Provided:** 2-day EnviroDIY stream sensor training for volunteers associated with the Renfrew Institute.

**Date of Initial Contact with Organization:**

**DEP Approval to Proceed Date:** 2/20/2018

**Date Assistance Began:** December 2017

**Date Assistance Completed:** April 2018

**Total Cost of Assistance:** ~\$3,900

**In-kind/Match Provided by Applicant Organization:** Yes

### **Overview of Assistance:**

Approximate Group Membership:

Total Number of Consultations Provided:

Total Number of Trainings/Workshops Provided:

Total Number of Individuals Assisted:

Size of Watershed Assisted:

Total Number of Stream Miles Improved or BMP's installed as a result of C-SAW Assistance:

## **Project Summary**

Renfrew Institute is the headquarters for the Antietam Watershed Association's stream monitoring program. In this capacity, they are currently monitoring 35 stream sites year-round on the East and West Branches of Antietam Creek using citizen monitors and college interns. They are requesting the Stroud Center to conduct a 2-day DIY stream sensor workshop to gain the technical expertise that will enable them to deploy a stream sensor monitoring station built during this workshop, along with additional sensors if possible, on several strategic sites saving time and personnel. They monitor chemical and physical data including pH, alkalinity, water temp, turbidity, nitrates and phosphates. The 2-day workshops integrate the use of these rapidly emerging/expanding technologies in open-source electronics, cyber-infrastructure, and data management tools for community scientist and school programs. Curricula and workshops enable participants to build, deploy, and manage wireless environmental monitoring stations along selected waterways and to interpret and communicate monitoring results that ultimately support environmental stewardships. In addition, the Renfrew Institute are exploring opportunities to forward longitudinal data to a new Chesapeake Bay-wide database under construction through the Chesapeake Monitoring Cooperative. The sensors will help them gather consistent data to submit to the new database. A further and very important goal, consistent with the mission of our organization, is to offer this exciting workshop as a valuable educational experience for the participants.

## **Applicant: Union County Conservation District**

**Applicant (new or continuing):** New

**River Basin:** Susquehanna River Watershed

**Watershed:**

**Watershed Size (acreage or sq. miles):**

**County (multiple):** Union

**Lead C-SAW Provider:** Stroud Water Research Center

**Type of Assistance Provided:** Presentations on sustainability practices, watershed restoration research and applications, as well as macroinvertebrates as assessment tools.

**Date of Initial Contact with Organization:** 11/9/2017

**DEP Approval to Proceed Date:** 2/20/2018

**Date Assistance Began:** 2/19/2018 (scoping discussion)

**Date Assistance Completed:** March 29, 2018

**Total Cost of Assistance:** ~ \$500

**In-kind/Match Provided by Applicant Organization:** Yes

### **Overview of Assistance:**

Approximate Group Membership:

Total Number of Consultations Provided:

Total Number of Trainings/Workshops Provided: One

Total Number of Individuals Assisted: 50

Size of Watershed Assisted:

Total Number of Stream Miles Improved or BMP's installed as a result of C-SAW Assistance:

## **Project Summary**

The Conservation District asked the Stroud Center to provide members of their farm community several presentations at the Stroud Center on the following: restoration monitoring and BMP practices including an onsite tour of our restoration education and instructional areas; watershed research and sustainability practices; using macroinvertebrate communities as an assessment tool.



## **Applicant: York County Master Watershed Stewards – Penn State Extension and York County Conservation District**

**Applicant (new or continuing):** Continuing/Ongoing

**River Basin:** Susquehanna

**Watershed:** Susquehanna

**Watershed Size (acreage or sq. miles):**

**County (multiple):** York

**Lead C-SAW Provider:** Stroud Water Research Center

**Type of Assistance Provided:** Training/Monitoring workshop on water chemistry monitoring, macroinvertebrate ecology, and stormwater management

**Date of Initial Contact with Organization:** August 11, 2015

**DEP Approval to Proceed Date:** 2016

**Date Assistance Began:** April 2016

**Date Assistance Completed:** ongoing

**Total Cost of Assistance:** ~\$500.00

**In-kind/Match Provided by Applicant Organization:**

### **Overview of Assistance:**

Approximate Group Membership: 12

Total Number of Consultations Provided: multiple emails and phone calls, 1 workshop at Stroud Water Research Center (April 2017),

Total Number of Trainings/Workshops Provided:

Total Number of Individuals Assisted:

Size of Watershed Assisted:

Total Number of Stream Miles Improved or BMP's installed as a result of C-SAW Assistance:

### **Project Summary**

Workshop at Stroud Water Research Center in May, 2018 for Watershed Stewards focused on water quality/chemistry, macroinvertebrate sampling and ID, and stormwater management

## **Applicant: Alliance for Aquatic Resource Monitoring (ALLARM)**

**Applicant (new or continuing):** New

**River Basin:** Pennsylvania- wide

**Watershed:**

**Watershed Size (acreage or sq. miles):**

**County (multiple):**

**Lead C-SAW Provider:** Stroud Water Research Center

**Type of Assistance Provided:** 2-day DIY stream sensor training for volunteers.

**Date of Initial Contact with Organization:**

**DEP Approval to Proceed Date:** 6/18/2018

**Date Assistance Began:**

**Date Assistance Completed:**

**Total Cost of Assistance:** \$3,500

**In-kind/Match Provided by Applicant Organization:** yes

### **Overview of Assistance:**

Approximate Group Membership:

Total Number of Consultations Provided:

Total Number of Trainings/Workshops Provided:

Total Number of Individuals Assisted:

Size of Watershed Assisted:

Total Number of Stream Miles Improved or BMP's installed as a result of C-SAW Assistance:

### **Project Summary**

Stroud Center conducted a 2-day DIY stream sensor workshop at Dickenson College to gain the technical expertise that will enable them and their volunteers as well as interested local citizen scientists to deploy a stream sensor monitoring station built during this workshop. The 2-day workshop integrated the use of rapidly emerging/expanding technologies in open-source electronics, cyber-infrastructure, and data management tools for community scientist and school programs. Curricula and workshops enabled participants to build, deploy, and manage wireless environmental monitoring stations along selected waterways and to interpret and communicate monitoring results that ultimately support environmental stewardships.

**Applicant: Cumberland Valley Trout Unlimited**

**River Basin:** Susquehanna

**Watershed:** Letort Spring Run

**Watershed Size (acreage or sq. miles):**

**County (multiple):** Cumberland

**Lead C-SAW Provider:** Stroud Water Research Center

**Type of Assistance Provided:** Advice on river restoration

**Date of Initial Contact with Organization:** 07 November 2018

**DEP Approval to Proceed Date:** 14 December 2018

**Date Assistance Began:** 14 December 2018

**Date Assistance Completed:** 14 December 2018

**Total Cost of Assistance:** ~\$2,000

**In-kind/Match Provided by Applicant Organization:**

**Overview of Assistance:**

Approximate Group Membership: 400

Total Number of Consultations Provided: 1

Total Number of Trainings/Workshops Provided: 1

Total Number of Individuals Assisted: 2

Size of Watershed Assisted:

Total Number of Stream Miles Improved or BMP's Installed as a result of C-SAW Assistance:

**Assistance Provided 01 July – 31 December 2018**

Drs. Melinda Daniels and Scott Ensign traveled to Carlisle, PA to consult with the Cumberland Valley Trout Unlimited chairman of stream restoration. Their chapter is considering stream restoration of the Letort Spring Run to improve water quality and fish habitat. Daniels and Ensign advised them of potential objectives to consider in a restoration project.

## **Applicant: Berks County Master Watershed Stewards**

**Applicant (new or continuing):** continuing

**River Basin:** Wyomissing Creek

**Watershed:** Wyomissing/Schuylkill

**Watershed Size (acreage or sq. miles):**

**County (multiple):** Berks

**Lead C-SAW Provider:** Stroud Water Research Center

**Type of Assistance Provided:** Advice on river restoration repair/re-do of a failed project implemented 15 years ago

**Date of Initial Contact with Organization:** May 16, 2018

**DEP Approval to Proceed Date:**

**Date Assistance Began:** May 16, 2018

**Date Assistance Completed:**

**Total Cost of Assistance:** \$2,090

**In-kind/Match Provided by Applicant Organization:**

### **Overview of Assistance:**

Approximate Group Membership:

Total Number of Consultations Provided:

Total Number of Trainings/Workshops Provided:

Total Number of Individuals Assisted:

Size of Watershed Assisted:

Total Number of Stream Miles Improved or BMP's Installed as a result of C-SAW Assistance:

### **Assistance Provided 01 July – 31 December 2018**

Dr. Melinda Daniels visited the site of a failed river restoration project on Wyomissing Creek and gave advice on how to proceed going forward.

## **Applicant: Land Conservancy for Southern Chester County**

**Applicant (new or continuing):** continuing

**River Basin:** Christina River Basin

**Watershed:** Delaware River Watershed

**Watershed Size (acreage or sq. miles):**

**County (multiple):** Chester

**Lead C-SAW Provider:** Stroud Water Research Center

**Type of Assistance Provided:** Workshop

**Date of Initial Contact with Organization:** August, 2013

**DEP Approval to Proceed Date:** 23 August, 2013

**Date Assistance Began:** September 2013

**Date Assistance Completed:** on going

**Total Cost of Assistance:** ~\$1500

**In-kind/Match Provided by Applicant Organization:** \$1,345.48

### **Overview of Assistance:**

Approximate Group Membership:

Total Number of Consultations Provided:

Total Number of Trainings/Workshops Provided:

Total Number of Individuals Assisted: 6

Size of Watershed Assisted:

Total Number of Stream Miles Improved or BMP's Installed as a result of C-SAW Assistance:

### **Assistance Provided 01 July – 31 December 2018**

A one hour meeting was held at Stroud Water Research Center to introduce 6 interns with the Land Conservancy for Southern Chester County to careers in natural science and watershed management. Five employees at the Stroud Center participated in this question and answer session to expose high school interns to the types of jobs available and careers in natural science and watershed science.

Dr. David Arscott provided Master Naturalist training instruction for Watershed Ecology 101 and WikiWatershed; Dr. John Jackson provided Master Naturalist training instruction for Water Quality and Aquatic Macroinvertebrates ID and Aquatic Ecology.

## **Applicant: Pennsylvania Association of Agriculture Educators**

**Applicant (new or continuing):** continuing

**River Basin:** statewide

**Watershed:** statewide

**Watershed Size (acreage or sq. miles):**

**County (multiple):** statewide

**Lead C-SAW Provider:** Stroud Water Research Center

**Type of Assistance Provided:** Training workshops at conference

**Date of Initial Contact with Organization:**

**DEP Approval to Proceed Date:** submitted request on 7/9/2018 and approved on 7/10/2018

**Date Assistance Began:**

**Date Assistance Completed:** 7/12/18

**Total Cost of Assistance:** ~2,500

**In-kind/Match Provided by Applicant Organization:** \$1,345.48

### **Overview of Assistance:**

Approximate Group Membership: 150

Total Number of Consultations Provided:

Total Number of Trainings/Workshops Provided:

Total Number of Individuals Assisted:

Size of Watershed Assisted:

Total Number of Stream Miles Improved or BMP's Installed as a result of C-SAW Assistance:

### **Assistance Provided 01 July – 30 September 2018**

The Stroud Center led a one day workshop (2 days with overnight travel included) on the Leaf Pack Network macroinvertebrate monitoring program.

## **Applicant: Hemlock Farms Conservancy**

**Applicant (new or continuing):** new

**River Basin:** Upper Delaware River

**Watershed:** Shohola Creek, Bushkill Creek

**Watershed Size (acreage or sq. miles):**

**County(ies):** Pike

**Lead C-SAW Provider:** Stroud Water Research Center

**Type of Assistance Provided:** Informative presentation on stream ecology, the needs of a healthy stream, approaches to monitoring, training on how to monitor with aquatic macroinvertebrates, guidance on experimental design and analysis.

**Date of Initial Contact with Organization:** February 15, 2018

**DEP Approval to Proceed Date:** Tara applied on 6/1/2018; approved on 6/4/2018

**Date Assistance Began:**

**Date Assistance Completed:**

**Overview of Assistance (if you know any of the below, please provide):**

**Total Cost of Assistance:** ~\$2,500

**In-kind/Match Provided by Applicant Organization:** \$1,345.48

### **Overview of Assistance:**

Approximate Group Membership: 150

Total Number of Consultations Provided: 1

Total Number of Trainings/Workshops Provided:

Total Number of Individuals Assisted:

Size of Watershed Assisted:

Total Number of Stream Miles Improved or BMP's Installed as a result of C-SAW Assistance:

Approximate Group Membership:

Size of Watershed Assisted:

### **Assistance Provided 01 July – 30 September 2018**

Staff from the Stroud Center provided phone consultation and assistance planning macroinvertebrate monitoring.

## **Applicant: Pennsylvania Trout Unlimited**

**Applicant (new or continuing):** continuing

**River Basin:** statewide

**Watershed:** statewide

**Watershed Size (acreage or sq. miles):**

**County(ies):** statewide

**Lead C-SAW Provider:** Stroud Water Research Center

**Type of Assistance Provided:** Environmental education and outreach, stream monitoring and evaluation, stream restoration design, and other guidance to help chapters protect, preserve, and conserve cold water resources in PA.

**Date of Initial Contact with Organization:**

**DEP Approval to Proceed Date:** 16 January 2018

**Date Assistance Began:**

**Date Assistance Completed:**

**Overview of Assistance (if you know any of the below, please provide):**

**Total Cost of Assistance:** ~\$1,380

**In-kind/Match Provided by Applicant Organization:**

### **Overview of Assistance:**

Approximate Group Membership:

Total Number of Consultations Provided:

Total Number of Trainings/Workshops Provided:

Total Number of Individuals Assisted:

Size of Watershed Assisted:

Total Number of Stream Miles Improved or BMP's Installed as a result of C-SAW Assistance:

Approximate Group Membership:

Size of Watershed Assisted:

### **Assistance Provided 01 July – 30 September 2018**

Staff from the Stroud Center provided phone consultation and assistance planning macroinvertebrate monitoring.



## **Applicant: Aquetong Watershed Association**

**Applicant (new or continuing):** new

**River Basin:** Delaware River Basin

**Watershed:** Aquetong Creek

**Watershed Size (acreage or sq. miles):**

**County (multiple):** Burks

**Lead C-SAW Provider:** Stroud Water Research Center

**Type of Assistance Provided:** Meeting with watershed association to discuss future restoration strategies/priorities

**Date of Initial Contact with Organization:** September 10, 2018

**DEP Approval to Proceed Date:**

**Date Assistance Began: Date Assistance Completed:**

**Total Cost of Assistance:** ~\$1,500

**In-kind/Match Provided by Applicant Organization:**

### **Overview of Assistance:**

Approximate Group Membership: 40

Total Number of Consultations Provided:

Total Number of Trainings/Workshops Provided: 1

Total Number of Individuals Assisted: 40

Size of Watershed Assisted: 8 mi<sup>2</sup>

Total Number of Stream Miles Improved or BMP's installed as a result of C-SAW Assistance:

### **Assistance Provided 01 July – 30 September 2018**

Dr. Melinda Daniels presented watershed restoration strategies to their membership with discussion of best options for their particular watershed situation.

## **Applicant: Bartram Garden**

**Applicant (new or continuing):** continuing

**River Basin:** Delaware River Basin

**Watershed:** Schuylkill

**Watershed Size (acreage or sq. miles):**

**County (multiple):** Delaware/Philadelphia

**Lead C-SAW Provider:** Stroud Water Research Center

**Type of Assistance Provided:** technical assistance monitoring and workshops

**Date of Initial Contact with Organization:** September 2017

**DEP Approval to Proceed Date:** 16 March 2018

**Date Assistance Began:** 01 October 2017

**Date Assistance Completed:**

**Total Cost of Assistance:** ~\$3,500

**In-kind/Match Provided by Applicant Organization:**

### **Overview of Assistance:**

Approximate Group Membership:

Total Number of Consultations Provided:

Total Number of Trainings/Workshops Provided:

Total Number of Individuals Assisted:

Size of Watershed Assisted:

Total Number of Stream Miles Improved or BMP's installed as a result of C-SAW Assistance:

### **Assistance Provided 01 July – 30 September 2018**

Stroud Water Research Center staff provided assistance in maintenance and troubleshooting of water monitoring equipment deployed at Bartram Garden.

## **Applicant: PA Conservation District Watershed Specialists**

**Applicant (new or continuing):** Continuing

**River Basin:** All in Pennsylvania

**Watershed:**

**Watershed Size (acreage or sq. miles):**

**County (multiple):** nearly all PA counties

**Lead C-SAW Provider:** Stroud Water Research Center

**Type of Assistance Provided:** Macroinvertebrate Training

**Date of Initial Contact with Organization:** 2013

**DEP Approval to Proceed Date:** 2013

**Date Assistance Began:** 2013

**Date Assistance Completed:** on going

**Total Cost of Assistance:** ~\$2,500

**In-kind/Match Provided by Applicant Organization:** yes = \$5,898.61

### **Overview of Assistance:**

Approximate Group Membership: 80

Total Number of Consultations Provided:

Total Number of Trainings/Workshops Provided: 2

Total Number of Individuals Assisted: 66

Size of Watershed Assisted:

Total Number of Stream Miles Improved or BMP's Installed  
as a result of C-SAW Assistance:

### **Assistance Provided July 1 – December 31, 2018**

Two macroinvertebrate training programs were provided at the 18<sup>th</sup> Annual Conservation District Watershed Specialists Meeting in State College, PA on October 11<sup>th</sup>, 2018. Stroud Center instructors included Dr. John Jackson, Mike Broomall, Kelly McIntyre, and Maria Scarborough. Macroinvertebrate identification workshops:

- **Beginner Level:** For those with little or no experience with aquatic macroinvertebrates. The goal of this session was to sort specimens into general categories, such as mayfly, stonefly caddisfly, beetle larvae, midge, or crane fly. 18 individuals attended
- **Intermediate/Advance Level:** For those with some experience working with aquatic insect family-level identification (e.g., Baetidae, Isonychiidae, Ameletidae, Ephemerellidae, Heptageniidae, Ephemeridae) using aquatic insect taxonomic keys and stereo microscopes. Participants worked in teams to improve identification accuracy and confidence at the family level. 48 attended this session.

## **Applicant: Lincoln University**

**Applicant (new or continuing):** New

**River Basin:** Elk Creek

**Watershed:** Susquehanna

**Watershed Size (acreage or sq. miles):** 106 square miles

**County (multiple):** Chester

**Lead C-SAW Provider:** Stroud Water Research Center

**Type of Assistance Provided:** 2 Day EnviroDIY Training Workshop

**Date of Initial Contact with Organization:** 13 September 2018

**DEP Approval to Proceed Date:** 26 September 2018

**Date Assistance Began:** 30 October 2018

**Date Assistance Completed:** 01 November 2018

**Total Cost of Assistance:** ~\$3,000

**In-kind/Match Provided by Applicant Organization:**

### **Overview of Assistance:**

Approximate Group Membership:

Total Number of Consultations Provided: 3

Total Number of Trainings/Workshops Provided: 3

Total Number of Individuals Assisted: 4

Size of Watershed Assisted:

Total Number of Stream Miles Improved or BMP's installed as a result of C-SAW Assistance:

### **Assistance Provided July 1 – December 31, 2018**

The Stroud Center hosted a 2 day workshop to train students and staff how to build, install, and operate an automated water quality monitoring station.

## **Applicant: Natural Lands**

**Applicant (new or continuing):** continuing

**River Basin:** Lehigh

**Watershed:** Bear Creek

**Watershed Size** (acreage or sq. miles):

**County (multiple):** Luzerne

**Lead C-SAW Provider:** Stroud Water Research Center

**Type of Assistance Provided:** Consultation on monitoring water quality

**Date of Initial Contact with Organization:** 28 Sep 2018

**DEP Approval to Proceed Date:**

**Date Assistance Began:** 08 Nov 2018

**Date Assistance Completed:** expected completion 13 Feb 2019

**Total Cost of Assistance:** ~\$800

**In-kind/Match Provided by Applicant Organization:**

### **Overview of Assistance:**

Approximate Group Membership:

Total Number of Consultations Provided: 1

Total Number of Trainings/Workshops Provided: 1

Total Number of Individuals Assisted: 6

Size of Watershed Assisted:

Total Number of Stream Miles Improved or BMP's installed as a result of C-SAW Assistance:

### **Assistance Provided July 1 – December 31, 2018**

Dr. Scott Ensign performed a site visit and consultation with staff from Natural Lands at their Bear Creek Preserve to identify locations to deploy water monitoring equipment.

## **Assistance Reports**

**United States Geological Survey**

## Schuylkill County Conservation District (SCD) and Catawissa Creek Restoration Association (CCRA)

Applicant information:		Procedure information:	
New group?	Ongoing	Initial contact with group	8/15/2017
Group membership	N/A	Scoping meeting	N/A
Watershed	Catawissa Creek	DEP approval	9/25/2017
Watershed size	153 sqmi	Assistance began	10/1/2017
County	Schuylkill and Columbia	Assistance completed	7/31/2018
In-kind match	N/A	Cost of assistance	\$8,900

**Assistance provided by:** U.S. Geological Survey – Pennsylvania Water Science Center (USGS-PAWSC)

**Assistance type:** Watershed-specific technical assistance and mentoring to include: assistance with development of monitoring plan/program and watershed protection plan, monitoring equipment selection, water-quality monitoring methods, streamflow monitoring methods, acid mine drainage monitoring & treatment

Consultations	3
Trainings/workshops	N/A
Individuals assisted	2
Stream miles improved	N/A

### **OVERVIEW**

In August 2017, a C-SAW Application for Assistance was received by the USGS-PAWSC to provide technical assistance to the Schuylkill Conservation District (SCD) operating in Schuylkill County Pennsylvania and the Catawissa Creek Restoration Association (CCRA) operating in Schuylkill and Columbia Counties. The Applicants were seeking watershed-specific technical assistance and mentoring with regard to: assistance with development of monitoring plan/program and watershed protection plan, monitoring equipment selection, water-quality monitoring methods, streamflow monitoring methods, and acid mine drainage monitoring & treatment. A Request to Proceed document was prepared and submitted to PADEP. PADEP approval was granted on 9/25/2017. In support of this request, a summary of technical assistance for the period 10/1/2017-12/31/2017 was provided in the 2017 C-SAW Annual Report.

### **Assistance provided January 1, 2018 – July 31, 2018**

USGS personnel worked with Applicant personnel to develop a proposal to complete a watershed restoration plan for Catawissa Creek. Previously submitted progress reports contain summary information regarding additional technical assistance provided to Applicant. The work associated with this C-SAW request for assistance can be considered complete.

### **Assistance provided August 1, 2018 – December 31, 2018**

No assistance provided – work considered complete.

## Brandywine Red Clay Alliance (BRCA)

Applicant information:		Procedure information:	
New group?	Yes	Initial contact with group	11/6/2018
Group membership	925	Scoping meeting	N/A
Watershed	Plum Run / Brandywine Creek	DEP approval	12/3/2018
Watershed size	3.5 sqmi	Assistance began	TBD
County	Chester	Assistance completed	TBD
In-kind match	N/A	Cost of assistance	\$3,400

**Assistance provided by:** U.S. Geological Survey – Pennsylvania Water Science Center (USGS-PAWSC)

**Assistance type:** Watershed-specific technical assistance and mentoring to include: assistance with development of monitoring plan/program and watershed protection plan, monitoring equipment selection, water-quality monitoring methods, quality control for water quality analysis

Consultations	TBD
Trainings/workshops	TBD
Individuals assisted	TBD
Stream miles improved	~1 mile

### **OVERVIEW**

In November 2018, a C-SAW Application for Assistance was received by the USGS-PAWSC to provide technical assistance to the Brandywine Red Clay Alliance (BRCA). The BRCA requested assistance from the USGS-PAWSC to set-up, install and program an ISCO automated sampler on Plum Run in Chester County. Plum Run is a 3.5 square mile watershed characterized by urban development in the headwaters (West Chester Borough), suburban development in much of the remaining area, and open space development (Radley Run Golf Course) at the bottom. The stream is impaired by stormwater runoff from impervious areas, which results in streambank erosion, sedimentation, and the addition of nutrients. Additional sources of impairment are discharges from a small sewage treatment plant and runoff from the golf course. Plum Run has a TMDL for sediment and nutrients. BRCA has completed a comprehensive restoration plan and has completed 5,100 feet of stream bank restorations and planted over 1000 trees and shrubs in the Plum Run Watershed.

This study/effort includes the installation of an ISCO automated sampler in the Plum Run Watershed to collect chemical and sediment samples during storm events. BRCA would like for USGS-PAWSC to assist in the selection of sampling locations, demonstrate initial set-up and programming of the automated sampler, and provide support and advice after the samples are collected to assist with any outstanding questions/concerns.

### **Assistance provided January 1, 2018 – March 31, 2018**

No assistance provided.



**Assistance provided April 1, 2018 – June 30, 2018**

No assistance provided.

**Assistance provided July 1, 2018 – September 30, 2018**

No assistance provided.

**Assistance provided October 1, 2018 – December 31, 2018**

A C-SAW Application for Assistance was received by USGS-PAWSC and a Request to Proceed document was prepared and submitted to PADEP. PADEP approval was granted on 12/3/2018. Technical assistance is expected to occur in 2019.

## Quality Control Assistance: 1/1/2018 – 12/31/2018

The following quality control assistance was provided by the Alliance for Aquatic Resource Monitoring:

	Quarter 1 (Jan – Mar)	Quarter 2 (Apr – Jun)	Quarter 3 (Jul – Sep)	Quarter 4 (Oct – Dec)	Annual Total
Groups assisted	3	6	8	6	13
Individuals assisted	6	28	27	26	87
Water samples processed	6	28	28	22	84
Tests performed	45	285	327	325	982

Quarter	Group	Parameters								# of Vols	# of Samples	# of Tests
		Alkalinity	Conductivity	Nitrate	Orthophosphate	pH	Total Dissolved Solids	Turbidity	Other			
1	Allegheny County Stream Team		X				X			1	1	6
1	PA Council of Trout Unlimited (CCC)		X			X	X			3	3	27
1	Venango PA SEC		X				X			2	2	12
2	Bradford County Stream Team		X				X			1	1	6
2	Conewango Creek Watershed Assoc.		X				X			6	5	30
2	Fayette County Stream Team		X				X			2	1	6
2	Johnston Run Revitalization Council		X	X	X		X	X		8	5	105
2	PA Council of Trout Unlimited (CCC)		X			X	X			9	14	126
2	Westmoreland County Stream Team		X				X			2	2	12
3	Allegheny County Stream Team		X				X			5	5	30
3	Antietam Watershed Association	X		X	X	X		X		8	7	147
3	Beaver County Volunteer Monitors		X				X			2	2	12
3	Conewango Creek Watershed Assoc.		X				X			3	3	18
3	God's Country Waterdogs		X			X	X			2	1	9
3	PA Council of Trout Unlimited (CCC)		X			X	X			1	1	9
3	PA Council of Trout Unlimited (CCC)		X			X	X	X		4	8	96
3	Westmoreland County Stream Team		X				X			2	1	6
4	Allegheny County Stream Team		X				X			3	2	12
4	Johnston Run Revitalization Council		X	X	X		X	X		7	6	126
4	PA Council of Trout Unlimited (CCC)		X			X	X			1	1	9
4	Ridge and Valley Streamkeepers	X		X		X		X		9	8	136
4	Trout Unlimited (Pipelines)		X			X		X		5	4	36
1	Venango PA SEC		X				X			1	1	6