



RiverStewards: Who We Are and What We Do

RiverStewards brings together those interested in the river to make a significant, collective social impact through inter-academic applied research, eco-tourism, reports from river guides and their clientele, and other deliberate cross-sector actions. We recognize the value of the Susquehanna River's social return on investment, which considers the environmental and social values that the river gives to us all, in addition to the economic benefits. Through our continued collective efforts and communication, we will raise awareness of the river's importance and how we can sustain it.

RiverStewards is the "Economic Value Curator for the Susquehanna" and seeks to inform and involve the next generation of leaders in caring for the river.

The theory of the problem: RiverStewards was created to bring together the disparate organizations and individuals currently working to protect and enhance the Susquehanna River watershed within Pennsylvania to work collaboratively on mutually beneficial solutions. Many times, these organizations are working within their own "silo" and not communicating and working with those of similar goals. For instance, there are numerous state agencies with regulatory responsibilities for the river that do not always work together, and are in fact at times working counter to each other. Even worse, the nonprofit organizations are competing against each other for a limited pool of grant dollars. These individual efforts make those dollars less effective than they could be if pooled among organizations with similar end goals. RiverStewards will work to remove these barriers and create an atmosphere that encourages collaboration and collective impact.

The theory of change: To remove the work silos and find funding that will move collective impact work on the Susquehanna River forward, RiverStewards will bring together all interested organizations to form partnerships that will be mutually beneficial in advancing the educational, economic, and social benefits of the river. These partners are many and include the PA Department of Conservation and Natural Resources, the PA Department of Environmental Protection, the PA Fish and Boat Commission, the PA Department of Community and Economic Development, the PA Department of Agriculture, the Chesapeake Conservancy, the Chesapeake Bay Commission, Susquehanna Heritage, the University Area Joint Authority, the Susquehanna River Basin Commission, the PA Chamber of Business & Industry, the Susquehanna Greenway Partnership, Millersville University, the Social Enterprise Institute (SEI) @ Elizabethtown College, among others. These groups will meet periodically in whole and through various workgroups to advance the mission of RiverStewards.

The theory of action: RiverStewards is made up of two separate entities, a nonprofit arm called RiverStewards Collaborative, and a for-profit arm called RiverStewards Benefit Corporation. The benefit corporation's work will fall into three buckets and all profits will be put toward the work of the nonprofit organization. In that way, the work of the nonprofit will be self-sustaining and not reliant on limited, competitive grant funding. The three for-profit buckets are: product commercialization – finding inventions created at colleges, buying them, and then scaling them up for sale in the public market; investment funding advisory services – helping organizations make their money do good for the world; and collaborative process management – helping municipalities and others via charrette facilitation and other services to work together to make collective impact. The nonprofit arm of the entity is also divided into three buckets: river economic curation – tracking the total economic benefits of the river and providing that data and analyses to other interested parties; research and education – this will include storytelling, public events, "guiding the science" to get river guides involved in data collection, and creation of One Water Blueprints, among other

activities; and a data repository – all data collected on the health of the river will be contained in a centralized, publicly-accessible database so that all stakeholders will have access to the same beneficial data resources. Both sides of RiverStewards will work with SEI to manage their financial resources and identify future pockets of funds that could advance the organizations’ work.

The following are the initiatives already underway, or soon to start, among RiverStewards and its many partners:

Shared Database for Susquehanna River Data - There is considerable useful data on the health of the Susquehanna River, yet it is housed within various “private” computers. This creates redundant studies, data gaps, and confusion. Having a shared database will advance our knowledge of the state of the Susquehanna River and come up with mutual solutions to address issues. Harrisburg University is interested in hosting the database and involving some of their graduate students and professors in managing it. The next step is to bring in representatives from the relevant state agencies, academia, nonprofits, and river guides to help decide data protocols and other measurements to ensure that the data is reliable and ok for public release/use.

Blueprint for One Water - We propose a regional governance structure for the management of municipal water quality and quantity, based upon this Blueprint that was developed by the Watershed Research Foundation. The pilot project will involve the University Area Joint Authority (UAJA), the Spring Creek Commission, RiverStewards, and others to address water quality and quantity issues within the Spring Creek watershed (near State College, PA). The project will involve a facilitated charrette that will bring together all interested stakeholders to develop a Blueprint for One Water for Spring Creek, with prioritized goals and actions. RiverStewards will then take this concept to other watersheds throughout the state.

Stormwater Mitigation Banking - The excess capacity generated by the Rock Lititz campus floodplain restoration/riparian buffer project (and other sites) creates potential opportunities for other land developers and homeowners within the Santo Domingo Creek watershed, if a stormwater mitigation bank existed. Staff from Rock Lititz, Warwick Township, and Lititz Borough have expressed interest in making this idea work. Now we need to determine how it will work in this pilot watershed, before taking the idea to other watersheds Lancaster County and beyond. This could encourage more developers to install forested riparian buffers to protect water quality.

Guiding the Science - River guides’ expertise of the Susquehanna River would provide invaluable data on the health of the river and its inhabitants to state agencies and academia, if only it could be captured in a manner useful to those groups. We propose training a select group of river guides to enter data into the shared database mentioned previously through the development of a smartphone application. Data points may include information on the smallmouth bass collected (length, weight, noticeable sores, lesions, or growths, behavioral anomalies, etc.), water conditions, and other points. As the project progresses, more river guides will be brought on board to cover different 40-mile stretches of the Susquehanna River.

River Economic Data Curation – Economics professor at Elizabethtown College, Dmitriy Krichevskiy, will lead this effort to map out the economic benefits of each segment of the Susquehanna River in Pennsylvania (# of miles in each segment to be determined). He will work in conjunction with economics professors from other institutes of higher learning in the watershed, having their students spend a semester researching their segment and compiling their research into a report that will be launched during a Future of the Susquehanna Forum some time in the coming year or two.

Vegetation for Restoration – RiverStewards will work with existing contacts at Octoraro Native Plant Nursery to propagate plants like water-willow (*Decodon verticillatus*) that are in decline but serve a vital role in water quality protection. We will also work with institutes of higher learning like Messiah College to ensure there is enough qualitative and quantitative data on the benefits of water-willow and similar vegetation to encourage their planting in restoration projects. These projects, once completed, will count as a best management practice for municipalities to meet some of the regulatory requirements of their TMDL and/or MS4 permits, thus saving them money in the long-run.

Susquehanna Storytelling – Professor Justin Mando at Millersville University had his creative writing class focus on the people, cultural history, and natural history of the Susquehanna River for the fall 2017 semester. Many great short stories and one video were developed by his students. In 2018, RiverStewards will take a select group of these projects and highlight them via social media and one or more events where the students will have an opportunity to gain public speaking experience while educating people about the river. Professor Mando is continuing this project with his spring 2018 class, so there will be additional stories and videos to highlight in the future.

Susquehanna River Islands – We have an intern from Millersville University who will begin working on this project in late January. She will be reaching out to state agency contacts and others about data on the ownership and management of government-owned river islands. Once we have a handle on the data, she will interview some river island managers/maintainers to create stories, videos, social media content, etc. to highlight the stewardship of the rivers and why it is important.

River Towns – Places like Marietta and Columbia are investing in businesses, new places to live, spaces to recreate, and other amenities to attract people to their “river town”. We want to work with other small cities and towns along the Susquehanna River, as well as existing organizations working with them (such as Susquehanna Heritage and DCNR) to showcase - through social and traditional media, outreach events, and other venues - the economic and quality of life benefits of living, working, and playing in and near the river and its tributaries.

Ramp It Up – We would like to have an intern collect data on the state of boat launches along the Susquehanna River to determine where needs for repairs/rehabilitation are located. The intern will interview key personnel and write the recommendations in a report. Then RiverStewards will search out potential private investors who can help rehab the sites via a public-private partnership. While predominantly related to boat ramps maintained by the Fish and Boat Commission, there is an opportunity to involve DCNR as well, particularly for state parks such as Shikellamy and Milton.

Outreach to the Plain Sect Community – Outreach to the Amish is important because they are a somewhat untapped resource for protecting water quality through agricultural BMPs. One-on-one outreach via an Amish Liaison is the most effective means of disseminating information. This will involve in person visits with Amish farmers and church leaders to create a mitigation bank specifically for plain sect farmers within the Mill Creek watershed, as a test case. The mitigation bank will trade water quality pollutant load reductions within the watershed that stem from BMPs implemented on Amish farms in the area for a reduction or elimination of the “dues” Amish members must pay to their collective. The project can then be taken to other counties in PA where the plain sect have a significant presence.

Outreach to Faith-based Organizations and Retirement Homes – Traditional conservation efforts and environmental education activities do not necessarily tap into the myriad members of the many faith-based organizations and residents of retirement homes located in central Pennsylvania. These individuals represent potential allies in the world of river conservation. However, given the large number of churches, synagogues, homes, and other facilities, it will take a variety of messaging, methods, and time to outreach to their members. We intend to involve college students in this outreach, which will have the added benefit of bridging the generational gap.

Water Week 2019 – Building on the success of the 2017 Lancaster County Water Week organized by the Lancaster County Conservancy, RiverStewards will work with the Susquehanna Heritage Coalition to bring the concept to the Bucknell University/Susquehanna University area in the spring/summer of 2019. This outreach event will have a festival-like atmosphere where attendees learn about the importance of the Susquehanna River watershed while having fun.

Academic Healthy Watershed Tours - LandStudies, Inc. has designed and built nearly 100 green infrastructure sites in Pennsylvania. RiverStewards will work with LandStudies to create an academic learning platform that allows educators and students to experience these real-life projects through a hands-on healthy watershed tour. The tour is designed to support the study of watershed basics, restoration approaches and principals, and how they can be applied to meet regulatory and environmental goals. Tours are customizable to reach multiple academic disciplines and fit into existing coursework.

Keeping Prescription Drugs out of Watersheds – Piggybacking on the work of the Susquehanna Heartland Coalition and their partnership with Geisinger Health, RiverStewards will help them expand their prescription drug take-back program to portions of the lower Susquehanna River in Pennsylvania by identifying secure locations at institutes of higher education, retail pharmacies, law enforcement, etc. to locate the take-back boxes and work with law enforcement and military personnel to safely dispose of these unwanted drugs so that they are not flushed or disposed of in a landfill where they can negatively impact water quality.

Bringing Beneficial Products to Market – The RiverStewards Benefit Corporation will work with the SEI to bring products developed at institutes of higher education to the market to benefit water quality and quantity. There are several products currently being looked at that would benefit farmers while reducing nitrate loading, helping water treatment plants find a beneficial use for their sludge, and growing plants for stream restoration projects. The profits from these endeavors will help pay for the work of the RiverStewards Collaborative nonprofit.

Public Policy – In general, RiverStewards would like to work with state agencies like DEP and DCNR on future policy discussions and formulations related to the Susquehanna River watershed. This may relate to water trails, river islands, stormwater mitigation banking, changes to MS4 Permit requirements, rules governing the operation of water treatment plants, riparian buffer and other BMP installation guidance, etc.

RiverStewards Initiatives 2018 – The Simple Version

