

Monitoring watershed improvements with citizen scientists in five Philadelphia area watersheds



Tookany/Tacony-Frankford
Watershed Partnership, Inc.



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1- Wissahickon Valley Watershed Association, Ambler, PA; 2-Tookany/Tacony-Frankford Watershed Partnership, Philadelphia, PA; 3-The Friends of Poquessing Watershed, Bucks and Philadelphia Counties, PA; 4-Lower Merion Conservancy, Gladwyne, PA; 5- Pennypack Ecological Restoration Trust, Huntingdon Valley, PA

Background

- The Delaware River Watershed Initiative (DRWI) seeks to improve the water quality of the Delaware River by focusing on targeted sub-watersheds (e.g. Philadelphia Watersheds) and to quantify these improvements.
- Tools to improve water quality include:
 - Ecological restoration and green infrastructure
 - Collaboration with municipal officials
 - Education and outreach
- Water quality improvements will be captured through three tiers of monitoring, including Research (University partners), Monitoring (watershed associations), and Citizen (trained citizen scientists)

The three tiers of monitoring are outlined here, including how citizen monitoring improves the Research and Monitoring Tiers.

Project goal: Determine water quality improvements in Philadelphia Watersheds

Monitoring Tier:

Research

Monitoring

Citizen

Tier Lead:

Temple and Villanova Universities

Watershed associations (Friends of the Poquessing, Lower Merion Conservancy, Pennypack Ecological Restoration Trust, Tookany/Tacony-Frankford Watershed Partnership, and Wissahickon Valley Watershed Association)

Volunteers trained by watershed associations

Tier Goal:



Quantify water quality improvements at projects (i.e. stormwater controls or restoration)

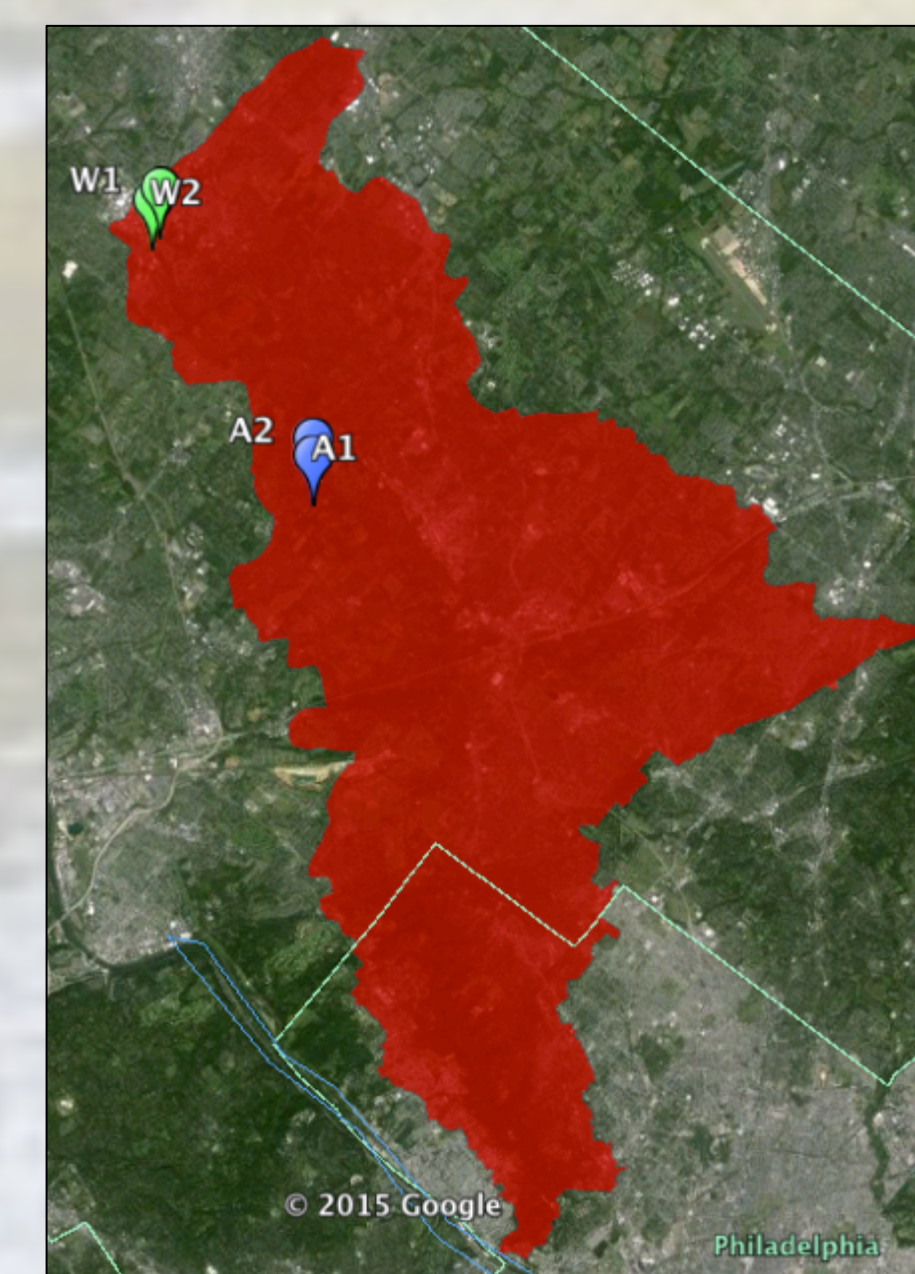


- Determine the current water quality and macroinvertebrate community and monitor for changes
- Use data as a communication tool with local government officials and the public

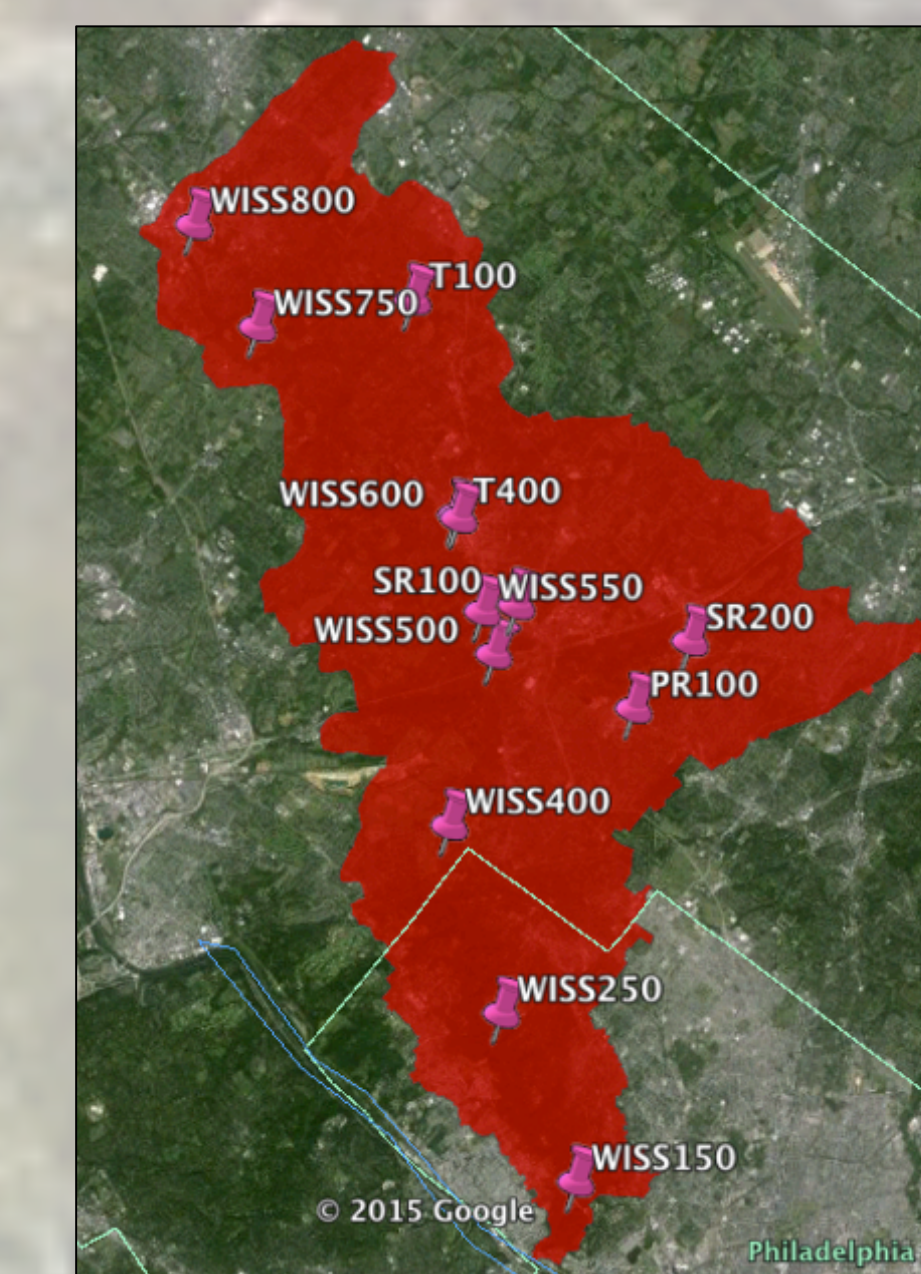


- Early detection of environmental concerns with increased trained eyes in the field ('Eyes and Ears of the Watershed')
- Frequent data collections
- Community engagement, education and outreach

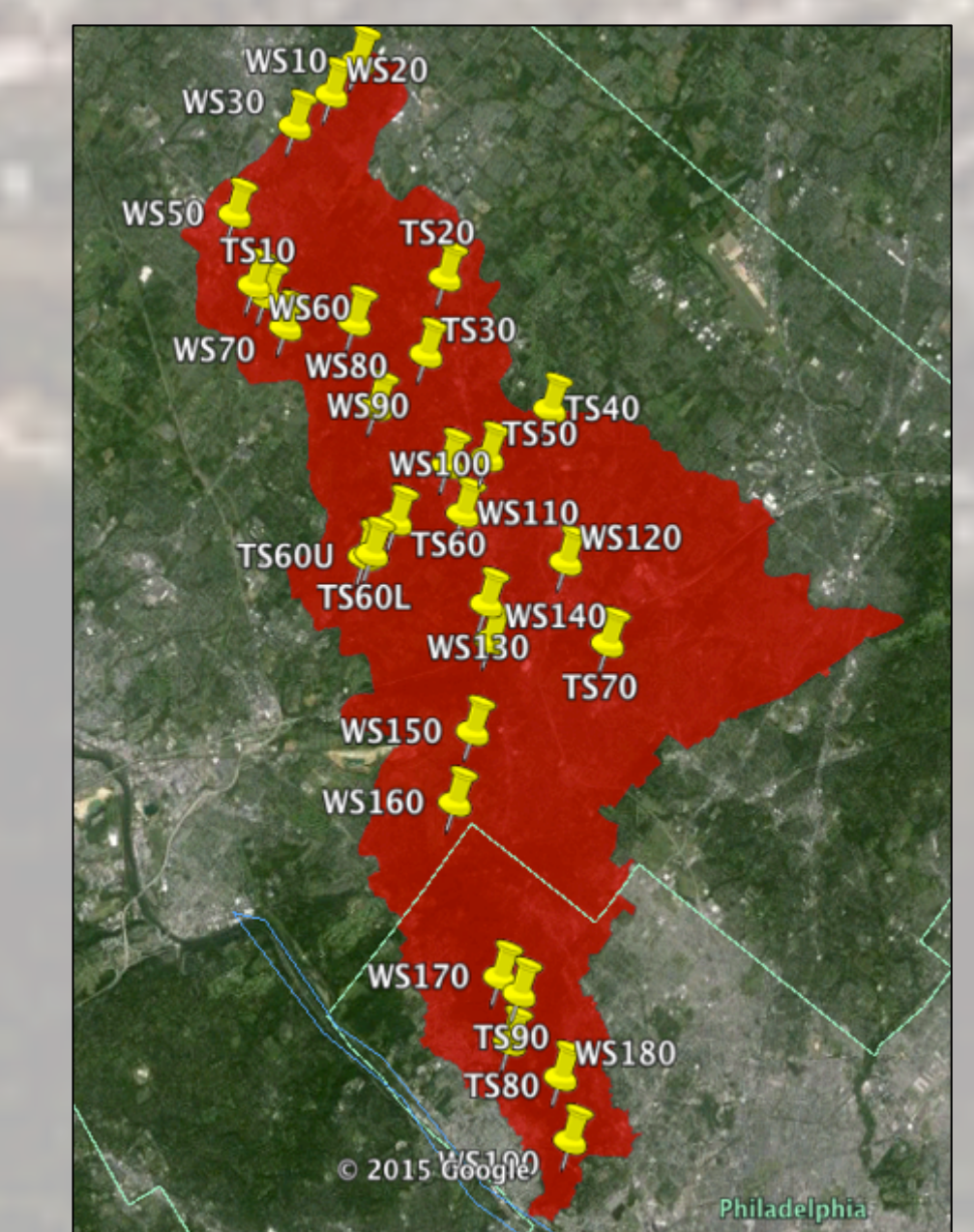
Collections:



Continuous data loggers at project sites collecting turbidity, temperature, water level, flow, weather, soil moisture, and other parameters



Grab samples for water chemistry and physical parameters four times a year at selected sites. Macroinvertebrates collected once a year



Large scale visual and test kit monitoring throughout the watershed

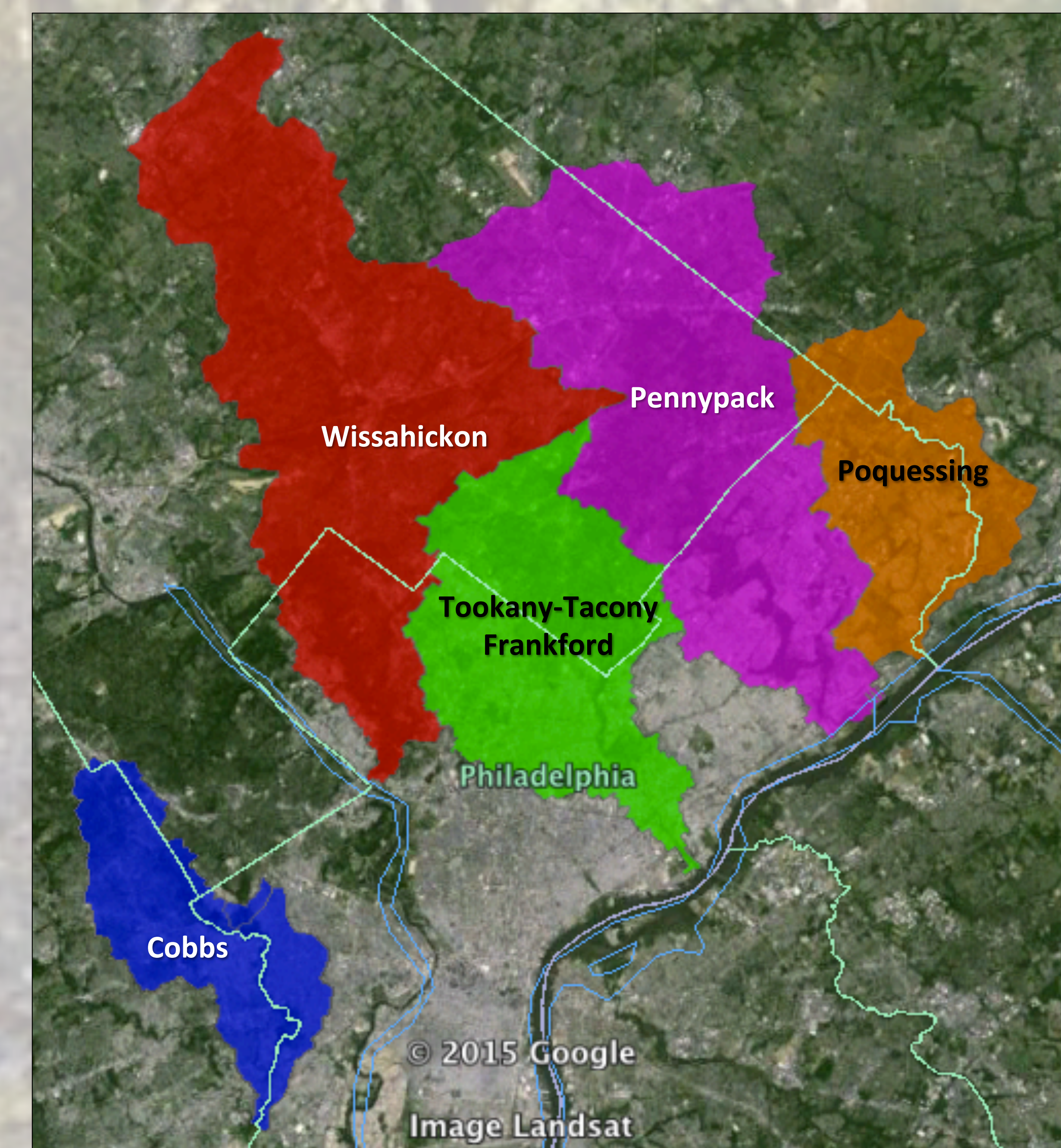


Figure 1. The Philadelphia Watersheds in the DRWI including Cobbs, Pennypack, Poquessing, Tookany-Tacony/Frankford and Wissahickon Creeks

Acknowledgments

- The William Penn Foundation for creating the DRWI
- University partners including Andrea Welker (Villanova University), Jeff Featherstone and Laura Toran (Temple University)
- Patrick Starr, Paul Racette, and Susan Myerov (Pennsylvania Environmental Council)

Improved monitoring through citizens

- Citizens are monitoring the largest area of the Watersheds and using ecosystem screens (visual and chemical test kits). They can identify areas of concern for more intense monitoring by the watershed associations
- As projects go in, citizens will be trained on visual assessments of projects and will inform the watershed associations and university partners as to any sudden changes

The value of citizen monitoring

- Identify concerns in the watershed including potential pollutants (e.g. salt piles near storm drains, downed silt fences)
- Community values the group and requests monitors in areas of concern
- Capture changes in the watershed as they happen and demonstrates how the watershed is changing (e.g. increased erosion)
- An educated group that reaches out to others in the community