

Engaging Landowners in Conservation Efforts for Water Quality Improvement For Small Water Systems

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Clarification of Public Water Systems

Community - primary residence

Municipal Authority, Borough/City, Corporation, Homeowners' Association, Etc.

Non-Transient Non-Community - repeat customers

Hospitals, Schools, Factories, Office Buildings

Transient Non-Community - passing through

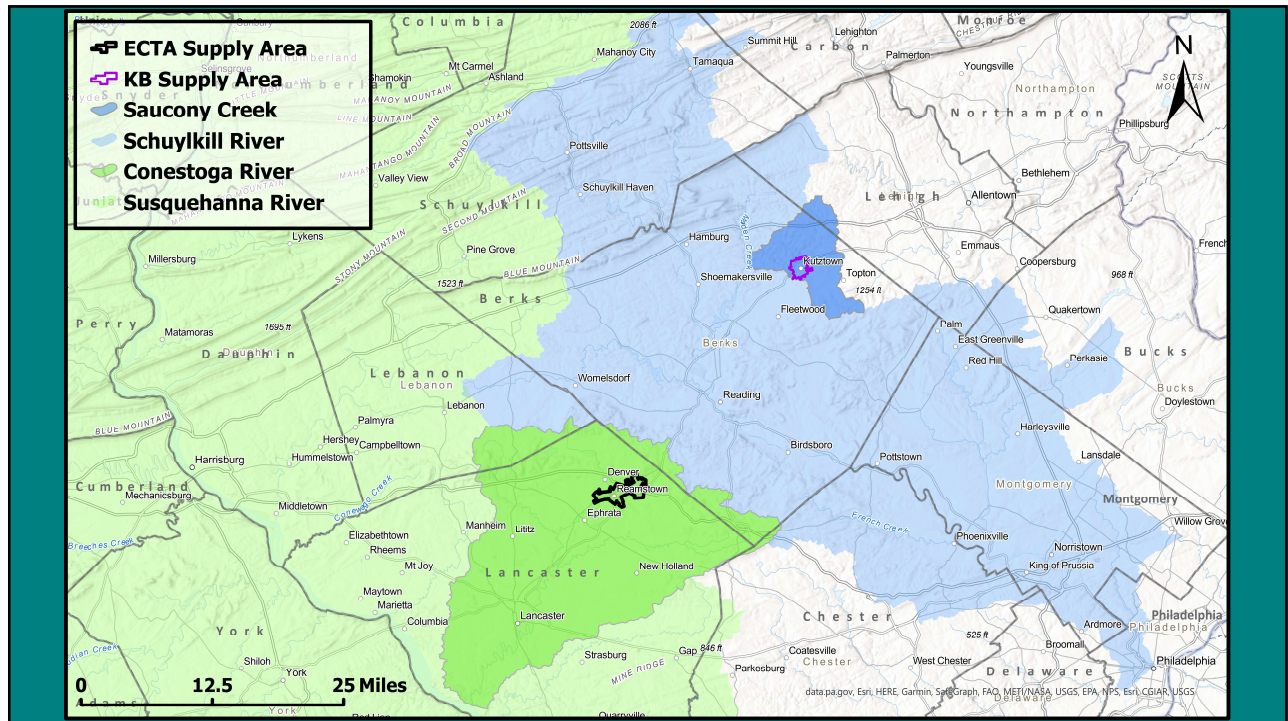
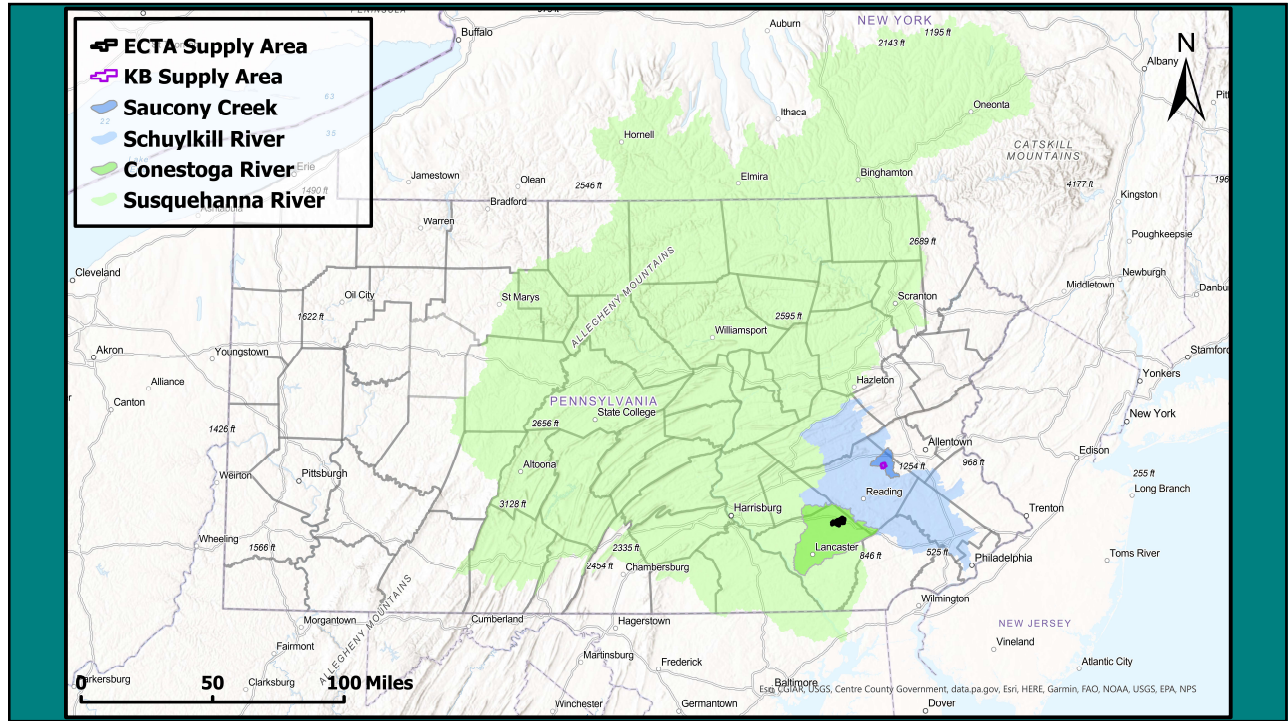
Gas Station (Turkey Hill/RCPP), Campground, State Park, Rest Area

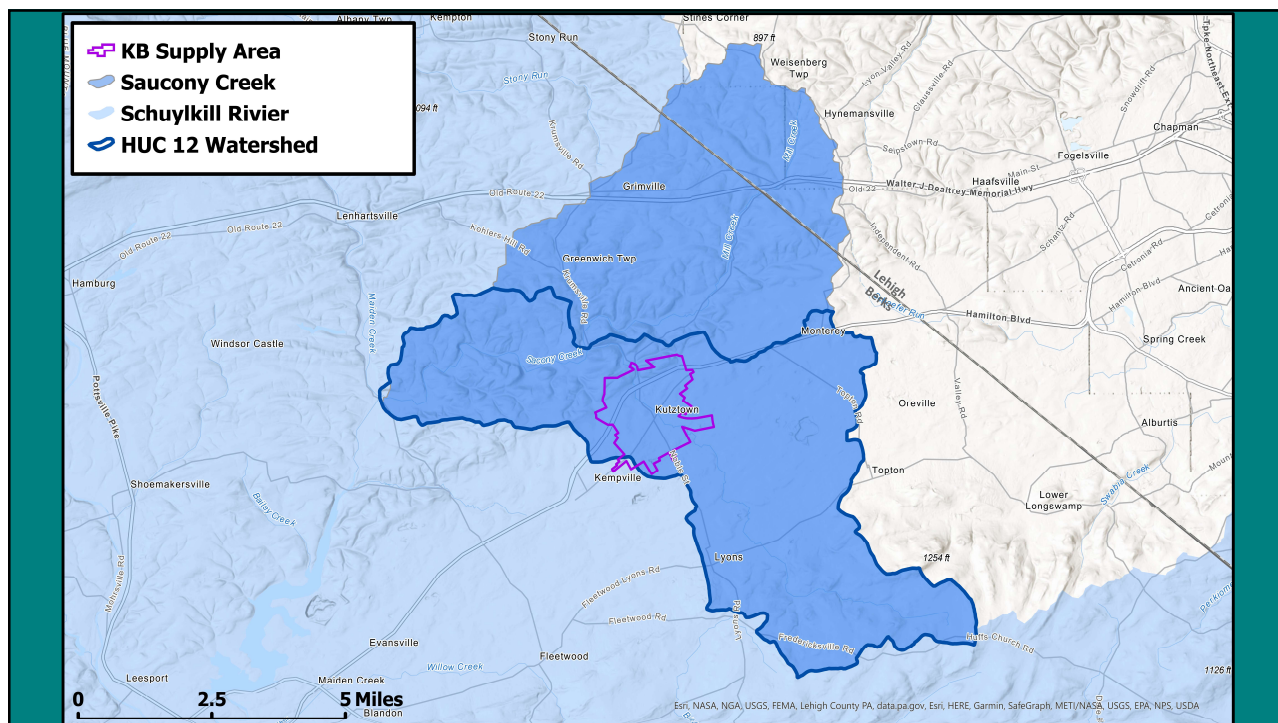
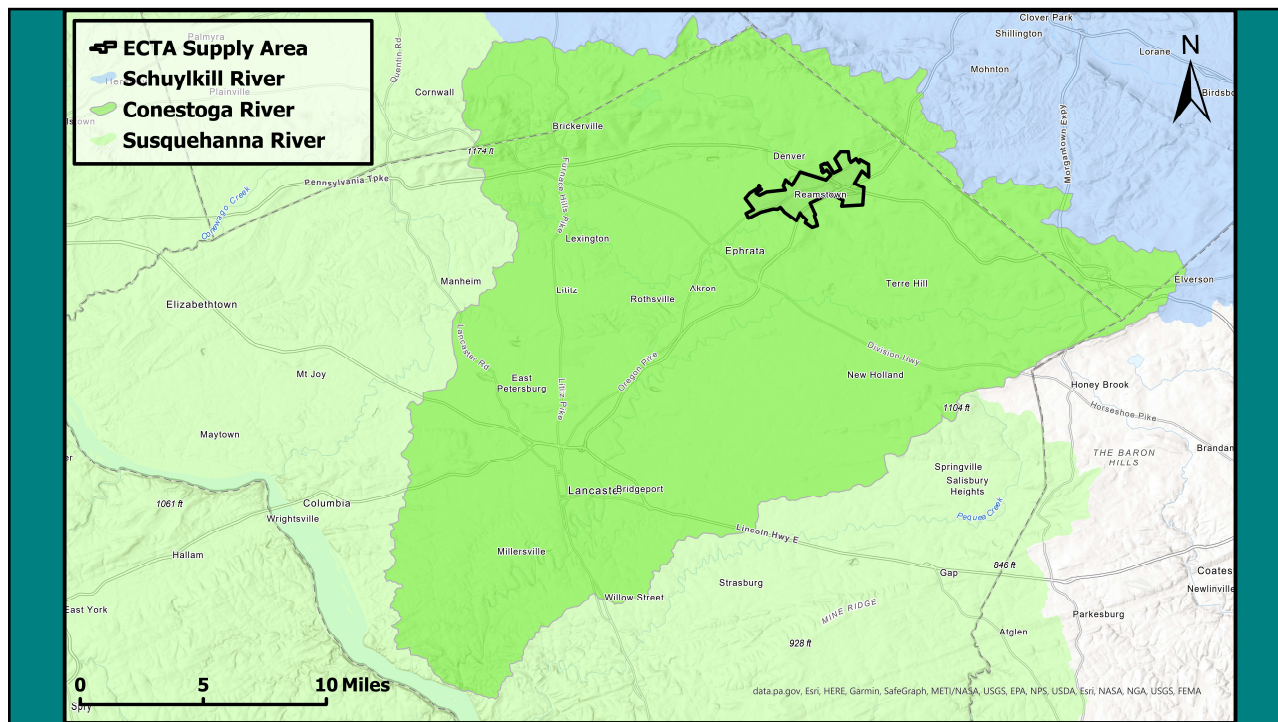
A Few Foundations of Conservation Partnership

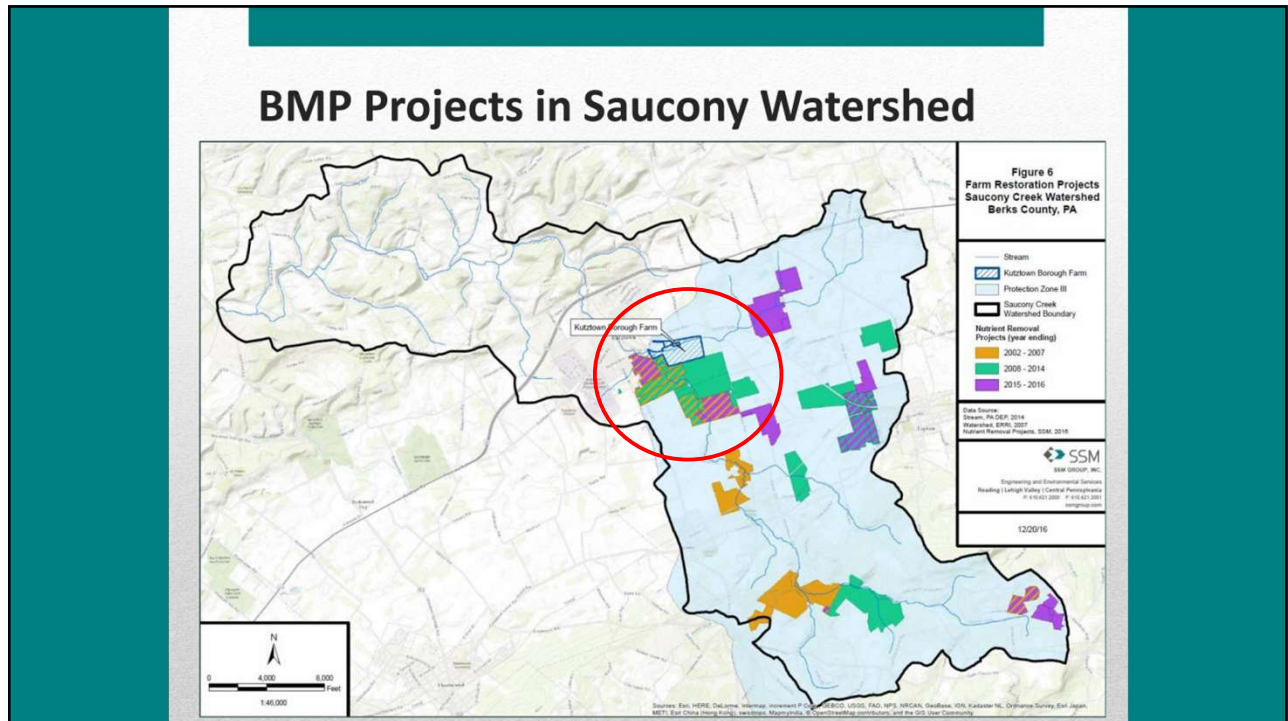
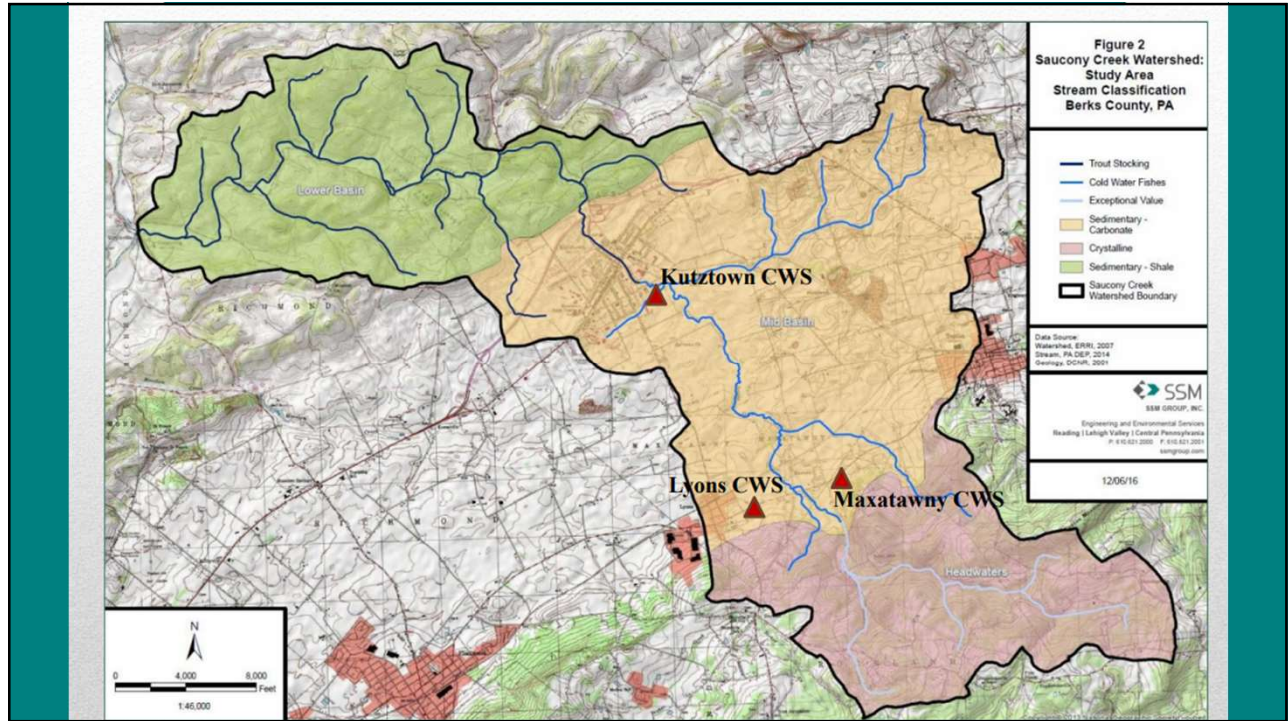
- **Know Your Sourcewater Protection Area**
 - *Up-to-date Sourcewater Protection Plan*
- **Get to Know Your Neighbors & Be a Neighbor**
- **Discover Strategies That Can Help With Management Goals**
- **Build The Right Partnerships**
 - *Community members, Conservation Partners, Water Systems*

An Example of Success in CWS Partnership









Borough Stream - Before



Borough Stream - After



Borough Well #4 - Before



Borough Well #4 - After

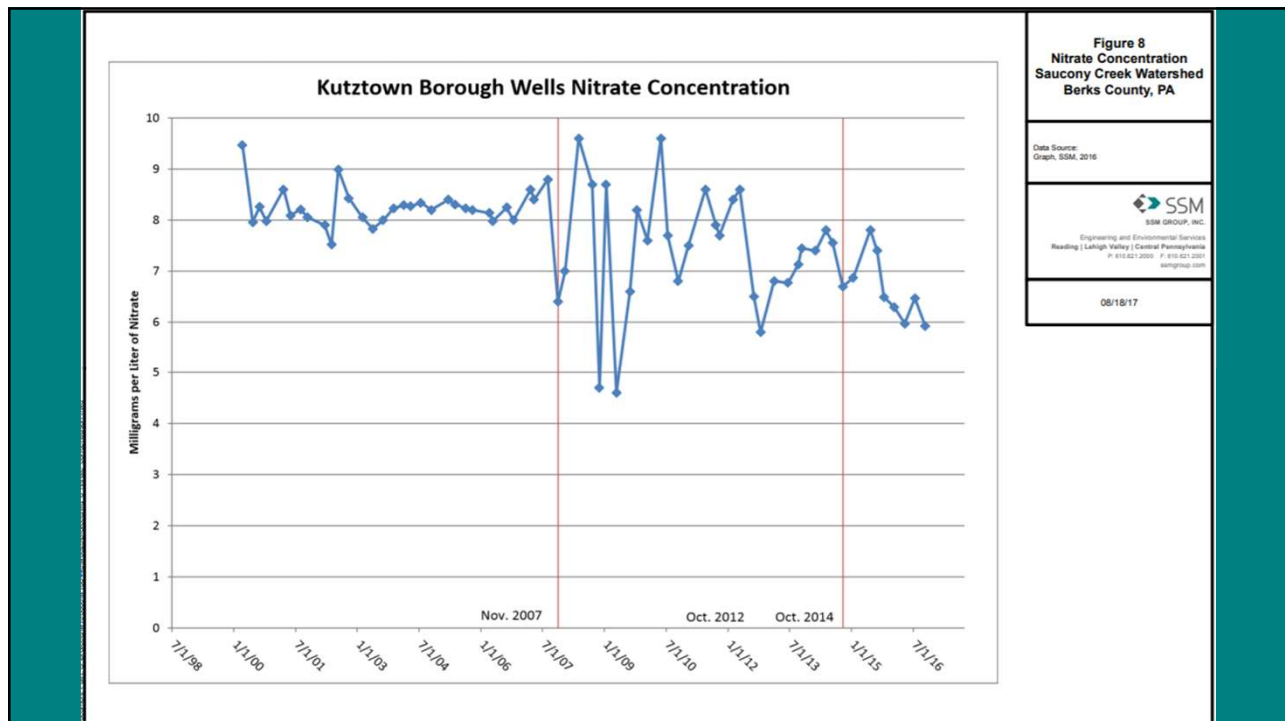
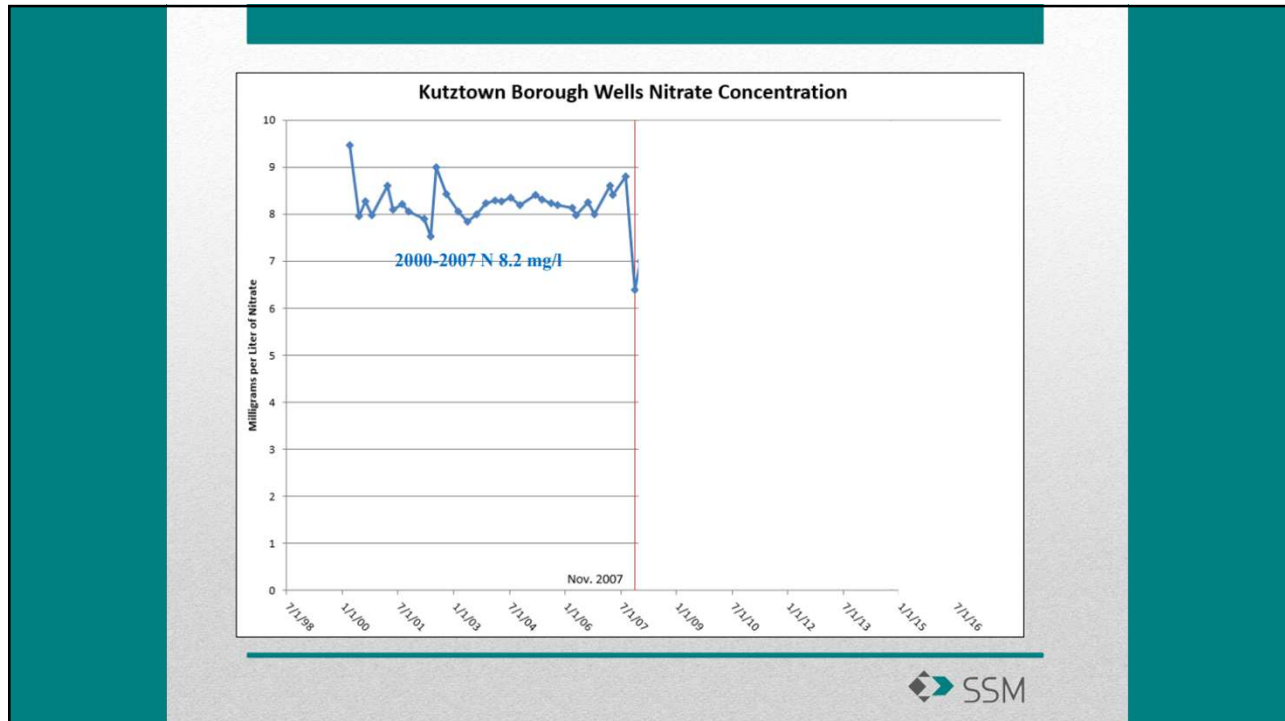


Manure Storage - Before



Manure Storage - After





Saucony Creek

Financial Support Conduits & Key Partners

- Berks Nature
- Berks Watershed Restoration Fund
- Schuylkill River Restoration Fund
- Schuylkill Action Network
- Schuylkill River National & State Heritage Area
- Berks County Conservation District
- Spotts, Stevens, McCoy, LLC
- Reading Area Water Authority
- PA DEP
- Natural Resources Conservation Service
- Western Berks Water
- PA American Water
- Stroud Institute
- City of Philadelphia
- Partnership for the Delaware Estuary
- Reading Area Water Authority
- Stowell Associates
- Kutztown Borough
- Aqua PA

Raw Water Treatment Costs = Motivation

Capital Investment

- Treatment Components
- Additional Treatment Processes
- Engineering Design Fees

Regulatory / Sampling Costs

- Regulatory Sampling
- Sample Reporting
- Additional Permitting

Water Treatment Process

- Chemical costs
 - Coagulants, Oxidizers
 - Brine Salt, Filter Waste Stream
- Human Resources Costs
 - Additional Certifications
 - Additional Operator Training
 - Additional Office Hours
- Pump / Energy costs
- Wastewater Treatment

Relationships will be the key to success through conservation.

1. Landowners
2. Similar Systems / Municipalities
3. Conservation Partners

Water System

Relationships with Landowners

- Identify the **right staff-person** to engage.
- Identify **key landowners** in your SWP area.
- Engage with **respect**. Don't burn bridges. Be a neighbor.
- Equip them with **relevant literature & implementation ideas**.
present solutions, not just problems
- Learn your neighbors' **common interests**.
plain sects – birds, farmer – fellow businessman, etc.
- Emphasize your **common goals**.
snacks vs crumbs

Relevant Educational Literature



CASE STUDY: SAUCONY CREEK AND KUTZTOWN BOROUGH

- Fertile soils.
- 51% of land use is agricultural.
- Few surface water streams and many sinkholes. This means that changes in water quality on land will directly impact the groundwater quality below in a short amount of time.

CONNECTION BETWEEN LAND MANAGEMENT AND DRINKING WATER

Nitrate is found naturally in drinking water at low levels. But practices like heavy fertilizer use or improper manure storage can increase nitrate levels to concentrations that are unsafe for drinking water. In the Kutztown area, runoff from land led to elevated levels of nitrates in streams and groundwater, which negatively impacted the raw water supply (untreated) of the Borough of Kutztown.



CLEAN WATER CAN BE ACHIEVED!

Throughout the Saucony Creek Watershed, agricultural practices for clean water were installed to improve the quality of the drinking water and reduce pollutants entering the groundwater system. In total, 31 projects were completed in the Saucony Creek Watershed, greatly reducing nitrate levels in drinking water to a stable level today. These efforts are helping to maintain clean, safe drinking water and productive farms in the Borough of Kutztown.

AGRICULTURAL PRACTICES FOR CLEAN WATER

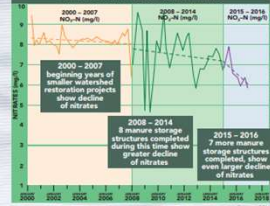
- Storing Manure
- Controlling Stormwater
- Buffering Streams
- Planting Cover Crops
- Using Grazing Regimes
- and more!



AN EXAMPLE FARM SHOWING AGRICULTURAL PRACTICES THAT REDUCE RUNOFF



KUTZTOWN RAW WATER NITRATE CONCENTRATIONS and Watershed Restoration Timeline



WHY SHOULD YOU CARE ABOUT NITRATES?

- Human Health:** High levels of nitrates may impact the body's capability to bring oxygen to the bloodstream, especially in babies. This can lead to a lack of oxygen in the blood causing skin to turn blue, a condition known as Methemoglobinemia, or "blue baby" syndrome.
- Money:** Because nitrate levels were high in untreated water, the Borough of Kutztown had to invest more money in water treatment. With the help of agricultural best management practices, nitrate levels in drinking water dropped, and the Borough was able to significantly reduce their treatment expenses.
- Downstream Neighbors:** Protecting land and water upstream will provide cleaner waters for neighboring towns downstream. For example, Saucony Creek Watershed is upstream of Lake Ontelaunee, which is the drinking water source for the city of Reading. From there, it flows downstream to the Schuylkill River then the Delaware River, which are sources of drinking water for millions of people - giving the Philadelphia Water Department and others a great reason to invest in projects upstream!

\$nacks vs Crumbs



2012 Study

Community Size	Ion Exchange	
	Low Cost	High Cost
Very Small (<501)	\$90	\$666
Small (501-3,300)	\$47	\$378
Medium (3,301-10,000)	\$48	\$273
Large (10,001-100,000)	\$28	\$229

Source: EWG, from Environmental Protection Agency, SDWIS Data, and University of California, Davis, Technical Report 6: Drinking Water Treatment for Nitrate

Fertilizer is Expensive!

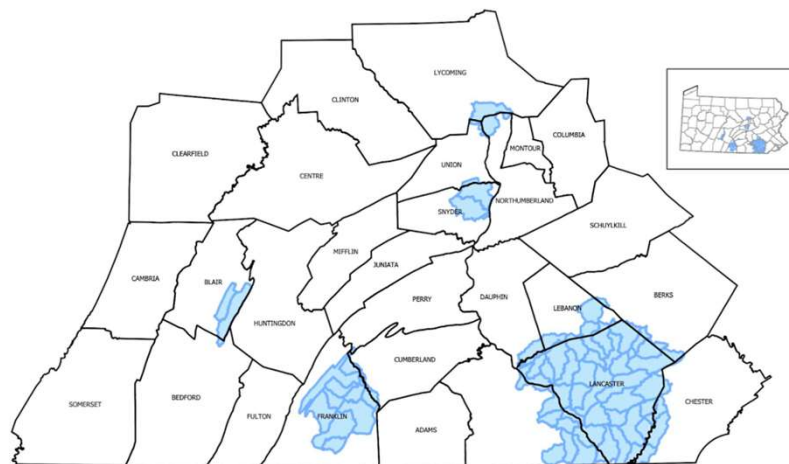
...and so is Nitrate Removal!

Water System Relationships with Conservation Partners

- Invite working relationships with preferred conservation entities.
- Opportunities for partnership
 - Share primary SWP focus areas & engaged landowners.
 - Consider partnership for raw water monitoring data.
 - Identify the most qualified system contact.
- Communicate *specific* water quality concerns & management areas.
 - Groundwater nitrates, Surface water turbidity, chlorides, algae, etc.
 - Consider SWP Maps

Example of a Current RCPP Project

RCPP Project #2513 Turkey Hill Clean Water Partnership



USDA NRCS Regional Conservation Partnership Program

Example of a NRCS RCPP Project

- **Heavy Lifter - Alliance for the Chesapeake Bay**
- **NRCS Regional Conservation Partnership Program (RCPP) Funded**

Potential Impact - Positives

- High rate of cost share
- Large funding pool (\$250,000 - \$10 million per / \$300 million annually)
- NRCS employs in-house engineers (i.e. manure pit design, etc.)
- Effective BMPs

Potential Impact - Negatives

- Contracts can be more comprehensive for land owners
- Little plain-sect participation with USDA
- Privacy requirements tend to prevent sharing “measured” success
- Time consuming for lead partner
- Less flexibility for implementation

Water System

Relationships with Water Systems

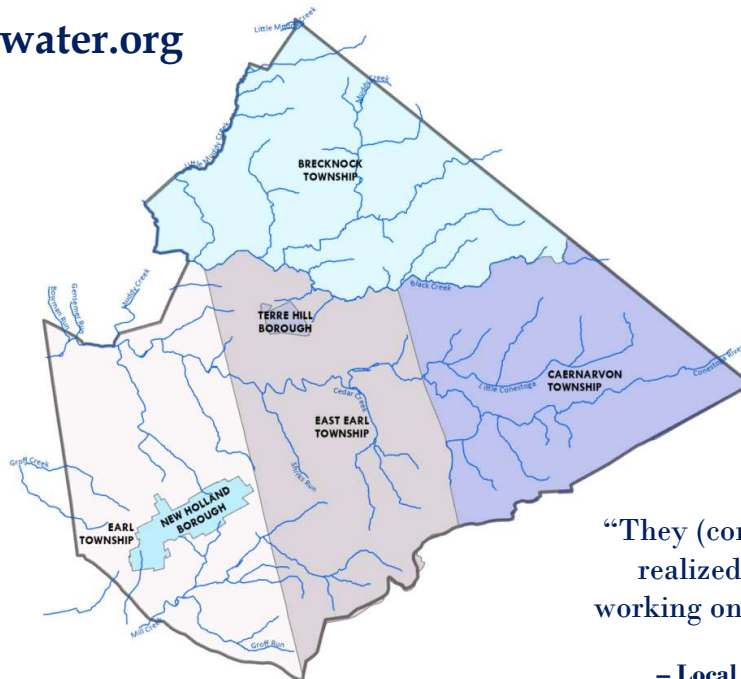
- **Consider similar systems as partners not competitors.**
- **Share knowledge & opportunities with one another.**
- **Regional Funding needs multiple potential projects so share away!**

Saucony Creek represented a 15+ year effort that happened in stages as funding and participants aligned.

Conservation Partners Relationships with Partners

- **The Law of the Lid**
Water systems will not rise above their “support network.”
- **Are you partnering with “heavy lifters” for grant proposals?**
SAN, Western Pennsylvania Conservancy, Stroud, etc.
- **Are you streamlining efforts with other organizations?**
ELANCO example

www.elancowater.org



“They (conservation groups) realized that they were all working on the same things.”

– Local Public Works Director

Conservation Partners Communication to Water Systems

- Focus on opportunities that address source *water* quality
- Offer success stories with **measured** results.
- Offer **concise** water related resources.
 - Outreach literature, grant participation, etc.
- **Remember: water systems specialize in *many unrelated skillsets*.**
 - Specialized treatment processes, pumps, electrical maintenance, distribution system maintenance, plant maintenance, general construction, PA One calls, drinking water regulatory compliance, water meter reading and maintenance, etc.

Consider partnering with me.

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The logo for the PA Rural Water Association features a stylized water drop icon to the left of the text "PA ruralwater". The "PA" is in a bold, sans-serif font, "ruralwater" is in a lowercase, sans-serif font, and "Association" is written in a smaller, italicized font below "ruralwater".