



House of Representatives
COMMONWEALTH OF PENNSYLVANIA

HOUSE DEMOCRATIC POLICY COMMITTEE HEARING

Topic: The Waters of Pennsylvania

418 Main Capitol Building – Harrisburg, PA

October 21, 2019

AGENDA

- 10:00 a.m. Welcome and Opening Remarks
- 10:10 a.m. Panel One:
- Aneca Atkinson, MSWREE, Deputy Secretary for Water Programs, Pennsylvania Department of Environmental Protection
 - Matthew Keefer, Assistant State Forester, Pennsylvania Department of Conservation and Natural Resources
 - Ann Pesiri Swanson, Executive Director, Chesapeake Bay Commission
 - Andrew Dehoff, Executive Director, Susquehanna River Basin Commission
 - Andrew Gavin, Deputy Director, Susquehanna River Basin Commission
 - Michael Nerozzi, Director of Policy and Planning, Pennsylvania Fish & Boat Commission
- 10:40 a.m. *Questions & Answers*
- 11:00 a.m. Panel Two:
- Jacquelyn Bonomo, President and CEO, PennFuture
 - John Stolz, Director of Center for Environmental Research and Education, Duquesne University
- 11:10 a.m. *Questions & Answers*
- 11:30 a.m. Panel Three:
- Russ Collins, Vice President of South Central Region, Trout Unlimited
 - John Kenny, Former Member, USA Swimming National Open Water Team
- 11:40 a.m. *Questions & Answers*
- 12:00 p.m. Closing Remarks



Testimony of

Aneca Y. Atkinson, Deputy Secretary

Pennsylvania Department of Environmental Protection

Hearing on Water Quality of Streams and Rivers

House Democratic Policy Committee

October 21, 2019

Good morning Chairman Sturla, Co-Chair Daley, and members of the committee. On behalf of the Department of Environmental Protection, I would like to thank you for the opportunity to discuss the Department's efforts to protect and restore the Commonwealth's abundant water resources, which include over 85,000 miles of rivers and streams and hundreds of square miles of lakes, ponds, wetlands, bays, and estuaries.

The Department's statewide Clean Water Program, consisting of the Bureau of Clean Water and Clean Water Programs in six regional DEP offices, carries out the majority of activities protecting and restoring clean water in Pennsylvania. There are four key components of the Department's statewide Clean Water Program that serve to protect and restore our waters: 1) first, the Department

develops water quality standards, including designated and existing uses, for surface waters, 2) second, the Department monitors and assesses the health of our waters to determine whether they are meeting their designated and existing uses, 3) third, the Department issues permits for activities involving the discharge of pollutants in a manner that is intended to maintain and restore the uses of our waters, and 4) fourth, the Department inspects the activities covered by permits and assures compliance. This process provides a cycle of continuous analysis and feedback that the Department uses to inform its decision-making.

I would like to explain the first and second components of this process in more detail because we receive many questions on it. The Department develops water quality standards for all surface waters of the Commonwealth, which are codified in Chapter 93 of the Pennsylvania Code. These standards consist of both designated uses and the parameter-specific criteria necessary to protect those uses. Aquatic Life Uses include: Warm Water Fishes (WWF), Trout Stocking (TSF), Cold Water Fishes (CWF), and Migratory Fishes (MF). Special Protection Uses include High Quality Waters (HQ) and Exceptional Value Waters (EV).

The Department will also evaluate requests for use re-designation when it receives a petition that is accepted by the Environmental Quality Board or when a request is received by another agency such as the Pennsylvania Fish and Boat Commission. In addition, routine aquatic life use surveys may indicate that the existing use of a water is different than the designated use; for example, a stream designated for Cold Water Fishes may be assessed to have an existing use of High Quality – Cold Water Fishes.

As part of the process to consider stream re-designations, the Department offers opportunities for the public to provide data and information during the evaluation process. First, the Department provides public notice of its intent to assess the candidate streams. The Department's notices requesting additional water quality data for the streams are published in the *Pennsylvania Bulletin*, direct mailings are sent to applicable stakeholders, and notices are posted on the Department's website. Once the data solicitations are completed, the Department prepares a draft stream evaluation report and makes it available for public comment. Comments are received and the report is updated to address the comments received. The report and recommendations are included

in a proposed rulemaking and presented to the Environmental Quality Board. In this way, the designated uses in Chapter 93 are continuously evaluated and updated as needed.

Regarding monitoring and assessment, the second key components of the Clean Water Program, the Department is required under Sections 303(d) and 305(b) of the federal Clean Water Act to monitor and assess surface waters and prepare a report every two years on the health of our waters. This report, which is called the Integrated Water Quality Monitoring and Assessment Report (or Integrated Report), was last completed in 2018. The 2018 Integrated Report covers the current status of Pennsylvania's waters and summarizes various programs in place to protect and improve water quality. Although reporting for the Clean Water Act has a long history, the Department's 2018 report was the first time an Integrated Report has been created in an entirely interactive format by any state in the country. This interactive format offers the ability to convey tremendous amounts of information in a way that is much easier to understand.

The Department assesses most streams for four use categories, which are Aquatic Life, Recreation, Potable Water Supply, and Fish Consumption. Overall, approximately 30% of Pennsylvania's streams are considered impaired for at least one of the four main use categories. Agriculture is the leading known source of stream impairments in Pennsylvania, causing the impairment of about 6,000 stream miles in Pennsylvania, followed closely by abandoned mine drainage, which causes the impairment of about 5,500 stream miles.

Impairments are not distributed evenly throughout Pennsylvania. Lancaster County, for example, has about 90% of its stream miles impaired for at least one of the four main use categories, while northern and more forested counties have far fewer impaired miles. This distribution of impairments has particular impact for where restoration efforts should occur in Pennsylvania, including the targeting of Pennsylvania's efforts to help restore the Chesapeake Bay. Half of Pennsylvania's land area drains to the Chesapeake Bay, and Pennsylvania comprises 35% of the entire Chesapeake Bay watershed. The Susquehanna River alone, residing mostly in Pennsylvania, contributes about 50% of the total freshwater flow to the Bay.

When waters are determined to be impaired, the next step in restoring those waters typically is the development of a Total Maximum Daily Load or TMDL, similar to the TMDL that EPA finalized for the Chesapeake Bay in 2010. The Chesapeake Bay TMDL establishes limits on the amount of sediment and nutrients that may be discharged to the Bay through local waters. Many of these local waters in Pennsylvania are also impaired for sediment or nutrients. For the Phase 3 Chesapeake Bay Watershed Implementation Plans or WIPs, EPA in particular focused on curbing the amount of nutrients, especially Total Nitrogen, in waters entering the Bay. Wastewater treatment plants have significantly reduced their output of Total Nitrogen over the past decade, and the largest remaining contributor to Total Nitrogen loads is the agricultural sector.

There are seven main priority initiatives within the Agriculture sector of Pennsylvania's Phase 3 Chesapeake Bay WIP. These initiatives include: compliance with state requirements to minimize soil erosion and manage manure nutrients, implementing soil health practices like planting cover crops and using no-till and minimum till planting, utilizing enhanced nutrient management practices like 4R nutrient stewardship (Right Source, Right Rate, Right Time, Right Place), implementing manure storage facilities where needed, tracking and reporting dairy precision feeding, eliminating and identifying areas for productive use of excess nutrients, and planting and maintaining grassed and forested stream buffers. These initiatives not only improve water quality, but also aim to improve the sustainability of agricultural lands and operations. These initiatives are not new and are known by the agricultural industry to be the best, most meaningful practices to implement on their farms to increase sustainability and profitability. In fact, the priority agricultural initiatives identified in Pennsylvania's Phase 3 Chesapeake Bay WIP were developed in close and extensive consultation with a variety of representatives of the agricultural sector.

As we move Pennsylvania's Phase 3 Chesapeake Bay WIP from planning to action, the Department is continuing to work with the Department of Agriculture and the Department of Conservation and Natural Resources and with teams in each county to develop and implement a strategy to succeed in restoring local waters while cleaning up the Bay. The Department has continued to meet with teams in the four pilot counties (Lancaster, York, Adams, and Franklin) to discuss opportunities and resources, and to receive feedback and answer questions – all in service of enabling counties to successfully implement their Countywide Action Plans. Department staff

discussed an Implementation Strategy for Pennsylvania's Phase 3 Chesapeake Bay WIP that is built on the fundamental need to leverage resources and build partnerships; these two areas are critical to successful implementation. The Implementation Strategy also considers that mobilizing the right people, effectively directing processes, and strategically managing projects and data must all work together to set each county up for success; focusing on any one of these aspects without enough attention to the others can lead to conflict and/or lack of progress.

An important part to ensuring progress in implementing Pennsylvania's Phase 3 Chesapeake Bay WIP is the investment of sufficient resources. To this end, the Department is utilizing three different state grant programs. The Phase 3 WIP Chesapeake Bay Countywide Action Plan Implementation Grants will fund the Community Clean Water Action Coordinator for Tier 1 and Tier 2 counties and will include money to be applied for and allocated by each county team's leader. Growing Greener and National Fish and Wildlife Foundation Pennsylvania-Local Government Implementation Grants are two additional grant programs that will be used to support implementation of Pennsylvania's Phase 3 Chesapeake Bay WIP. Other state and federal funding opportunities include but are not limited to: the Resource Enhancement and Protection Program (referred to commonly as "REAP"), Conservation Excellence Grants, PENNVEST, Chesapeake Bay Agricultural Inspection and Pilot Implementation Grants, and Natural Resource Conservation Service (NRCS) funding like the Environmental Quality Incentive Program (commonly referred to as "EQIP") and the Regional Conservation Partnership Program.

Collecting, tracking, verifying, and reporting data is another requirement to document progress in the implementation of Pennsylvania's Phase 3 WIP and to meet accountability measures to EPA and other stakeholder. This effort includes reporting WIP Progress and Milestone Reporting, as well as two-year milestone updates to the Chesapeake Bay Program Partnership. There are multiple tools that are being enhanced and integrated together to streamline reporting and to provide accurate and reliable data documenting progress.

In summary, the Department maintains a deliberative and iterative process to protect and restore water quality through its statewide Clean Water Program and in the Department's approach to implementing its responsibilities under the Chesapeake Bay TMDL. There is no question that over

the past few decades federal and state water quality programs have cleaned up many rivers and streams across the Commonwealth, but the reality is that many of Pennsylvania's toughest challenges lie ahead.

Thank you again for inviting the Department to testify before the committee on this important topic. We appreciate the support you provide to the Department's efforts on behalf of the citizens of this Commonwealth. We look forward to continuing to work with the legislature to address these issues I've discussed here today. I thank you for your time, and I am available to respond to any questions you may have.

TO: Members of the House Democratic Policy Committee

FROM: Matthew Keefer
Assistant State Forester
DCNR, Bureau of Forestry

DATE: October 21, 2019

SUBJECT: Waters of Pennsylvania (WOPA)

Who we are

Good Morning, I am Matt Keefer with the Department of Conservation and Natural Resources, Bureau of Forestry. In DCNR, we manage Pennsylvania's 121 State Parks and 2.2 million acres of State Forests. We also provide grant funding and technical assistance to Pennsylvania communities and landowners to conserve and improve their forests and open spaces. Today, I look forward to discussing with you the connections among our forests, water quality and habitat, and providing recreation opportunities. Thank you for this opportunity

Outline

I'll begin by providing an overview of our forests in Pennsylvania, then talk about the connections among forests, water quality, habitat, and recreation. And then conclude with some examples of how DCNR is working to enhance those connections in both urban and rural landscapes across the Commonwealth.

Connections among forests, water, habitat, and recreation

In Pennsylvania, we are fortunate to have nearly 17 million acres of forest covering about 60 percent of the Commonwealth. 30 percent of this forest is publicly owned by agencies like DCNR, PGC, and the USFS. The remaining 70 percent, or about 12 million acres, is privately-owned by families and individuals. These forests provide many critical values to the commonwealth, including clean air, plant and wildlife habitat, wood products and jobs to support the state's \$16 billion forest products industry, and carbon sequestration and climate change mitigation. In urban areas trees improve aesthetics and increase property values, and provide many human health benefits. In rural areas, forested watersheds produce the cleanest water of any land use, and in urban areas trees help to mitigate storm water impacts and help to remove pollutants from our waterways.

Trees and forests are critical to clean water, especially in areas directly adjacent to streams and rivers. We call this the riparian area, or riparian forests. These streamside forests provide buffer zones between the waterways and adjacent agricultural or developed lands, both of which contribute to pollution run-off. These streamside forests also provide habitat for many wildlife species, help to improve habitat conditions for aquatic organisms in the waterways, and help to reduce the frequency and intensity of flooding.

Trees along streams provide shading to help cool the water, critical for native brook trout populations. The leaf litter from native trees provides food for aquatic insects, which are a critical food source for

many types of fish. And tree roots uptake excess nutrients such as nitrogen and phosphorus, and other pollutants; preventing them from entering the waterway.

Riparian forests also provide important terrestrial habitat for deer, small mammals, birds, and waterfowl. These streamside forests are especially important for providing connections and corridors to larger tracts of forests and other habitats.

And finally, it is important to highlight the recreation value of PA waterways. Canoeing, kayaking, hunting, fishing, and birdwatching are obvious examples. Improved habitat and water quality that result from our forests, especially riparian or streamside forests, only enhance these recreation opportunities.

DCNR Efforts

Recreation

Considering the importance and connections of streams and forests, DCNR and our partners are engaged in many efforts to improve habitats, water quality, and enhance recreational opportunities along our waterways. Pennsylvania's outdoor recreation industry supports 251,000 direct jobs, \$29.1 billion in consumer spending, and \$8.6 billion wages and salaries.

DCNR's Bureau of Recreation and Conservation (BRC) works closely with local governments and other NGO partners (watershed associations, land trusts, recreation commissions etc.) to offer funding and technical assistance related to outdoor recreation and natural resource conservation. The Bureau's Rivers Program focuses on waterways across the commonwealth

- BRC offers funding to local communities to build public access to water—boat launches, fishing piers, etc. Additionally, DCNR is part of the Chesapeake Bay Watershed Goal Implementation Team to increase access to water for recreation throughout the bay watershed. DCNR recently partnered with the Trust for Public Lands to research public access to water for recreation purposes statewide. These results will be used to identify areas of the state where waterway access is lacking, and work with local community leaders and NGO partners to increase access opportunities. Recent surveys completed for PA's State Comprehensive Outdoor Recreation Plan noted kayaking as the number one outdoor recreation activity Pennsylvanian's want to try. This further supports DCNR's work to improve close to home public access to waterways for recreation.
- BRC also offers funding to local communities to complete improvement projects along waterways—floodplain restoration, (small) dam removal, stream restoration, fish habitat improvement. These projects improve water quality, habitat, and recreational opportunities.
- The statewide water trail program is managed through a partnership including DCNR staff. This program includes 28 segments of waterways across the state, and relies on partner organizations to encourage use of these waterways for recreation. A primary goal of this program is to build personal stewardship for natural resources among citizens by engaging them in outdoor recreation opportunities.
- DCNR also encourages stewardship by contributing funding to organized paddling events (sojourns) organized by local partners.
- And finally, we all know there are countless recreation opportunities in our 121 State Parks and millions of acres of State Forest across the Commonwealth

Improving water quality and habitat through riparian forest buffers

For the last segment of my presentation, I'd like to talk about what we're doing to restore forest buffers across the Commonwealth. Planting trees along streams is a relatively simple practice that helps to improve both habitat and water quality. Many of our streams, both in urban and rural landscapes do not have forested buffers. DEP and the Stroud Water Research Center spearheaded early efforts to restore streamside forests a couple decades ago, and now DCNR, along with many partners are building on this previous success.

Pennsylvania has more than 86,000 miles of rivers and streams. Maintaining and restoring riparian buffers is one of the most cost effective and cost-efficient strategies for meeting Chesapeake Bay Program goals and Total Maximum Daily Load obligations. DCNR's riparian buffer program invests in green infrastructure along our streams and rivers to reduce storm-water flow, remediate pollution, and improve habitats.

However, establishing streamside forests is not without challenges. Ecologically, challenges include choosing the right trees for site, overcoming weeds and invasive plants, preventing damage from animals such as mice and white-tailed deer, and proper maintenance to ensure a successful planting. And from a social perspective, folks sometimes view these new plantings as messy or unkept, farmers need to be compensated for taking crop or pasture land out production, and it's a change of traditional land uses that takes time for folks to adjust. Additionally, they cost about \$4,000 per acre to plant and maintain.

To address these challenges, DCNR has been working with its partners to develop strategies for education, outreach, and implementation. Additionally, we've been providing grants to partners through the Community Conservation Partnership Program; and we've received Federal grants and funding to directly support the planting and maintenance of riparian buffers. While much of the attention is focused in the Chesapeake Bay Watershed and working toward our commitments of the Watershed Implementation Plan, we are engaged statewide with partners and landowners. DCNR has invested close to \$5 million over the past three years toward planting streamside forests.

Conclusion

In conclusion, I'd like to leave you with the simple message that trees and forests contribute significantly to habitat, water quality, and recreation opportunities—all enhancing our economy and quality of life. Additionally, other practices like planting individual trees in and conserving existing forests provide these same values. DCNR has many programs and resources available to communities and landowners, including staff to provide technical advice and guidance along with funding for tree planting and enhancing outdoor recreation experiences. Thank you for the opportunity to address your committee.

CHESAPEAKE BAY RESTORATION: CHALLENGES FACING PENNSYLVANIA

House Democratic Policy Committee
October 21, 2019



Ann Swanson, Executive Director
Marel King, Pennsylvania Director
CHESAPEAKE BAY COMMISSION



CHESAPEAKE BAY COMMISSION

Tri-State Legislative Commission

Established by state laws in 1980

MD, VA, PA

7 Members from each State

- 2 Senators
- 3 House Members
- 1 Cabinet-Level Secretary
- 1 Citizen Representative

Translate science into coordinated Federal & State policy

Legislative arm of the Chesapeake Bay Program

Coordinate region's policy interests with Congress

PENNSYLVANIA'S ROLE

BY THE NUMBERS

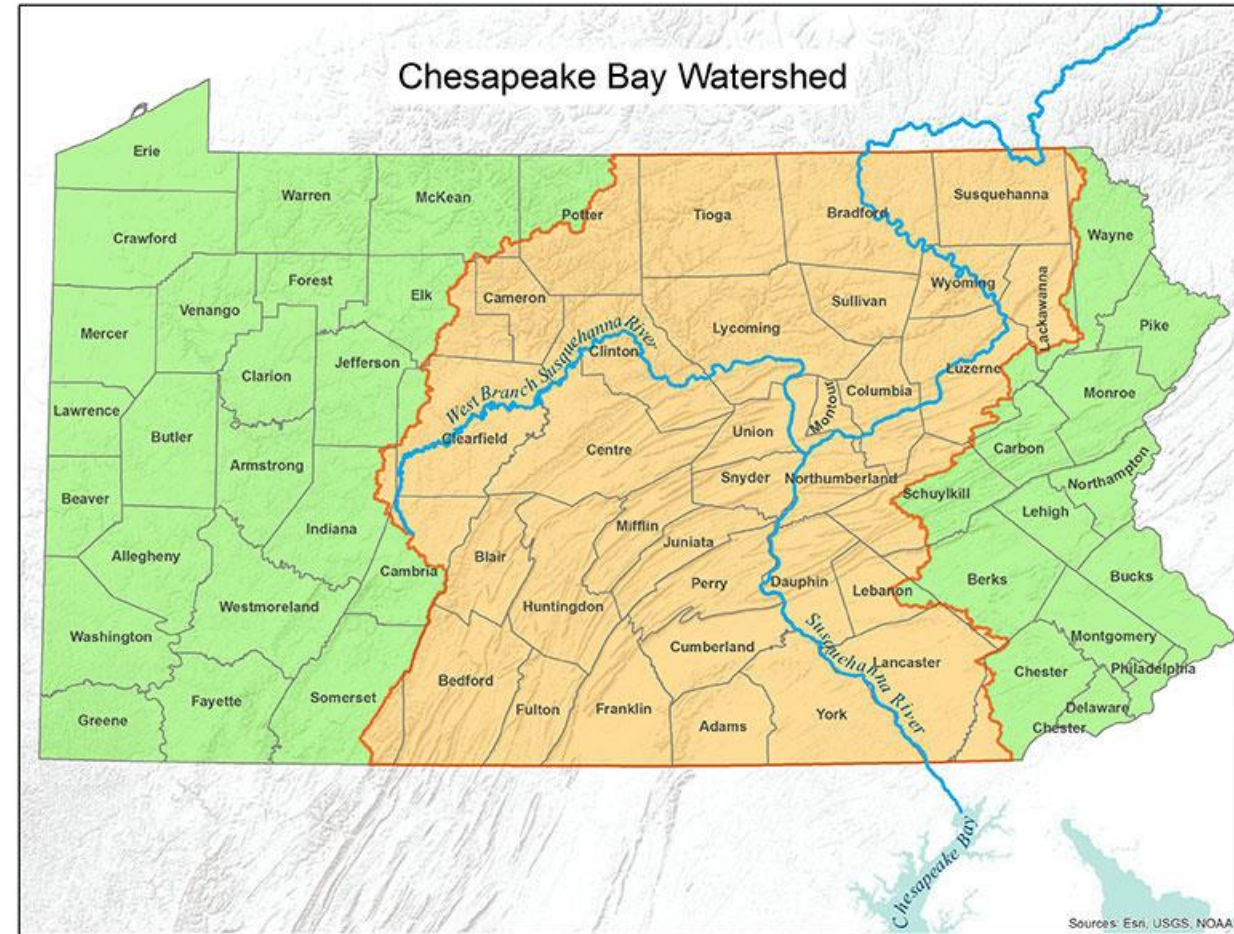
50% of the state

35% of the Chesapeake watershed

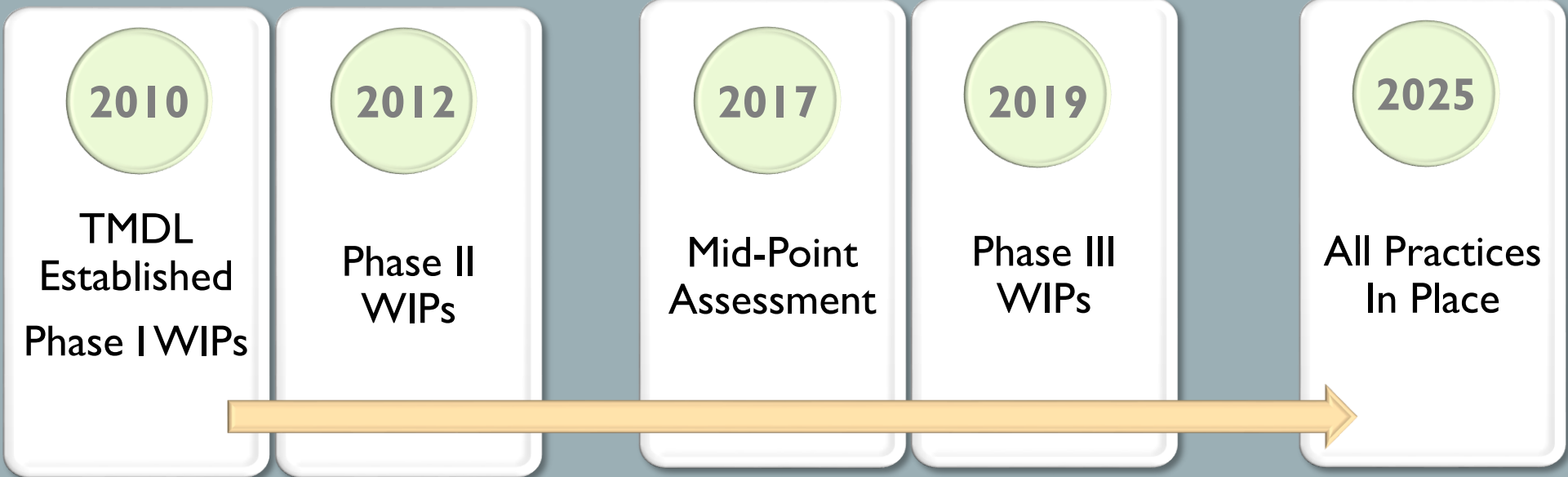
50% of the Bay's fresh water

43% of nitrogen

26% of phosphorus



TIMELINE



PENNSYLVANIA'S PROGRESS SO FAR

1985

2018

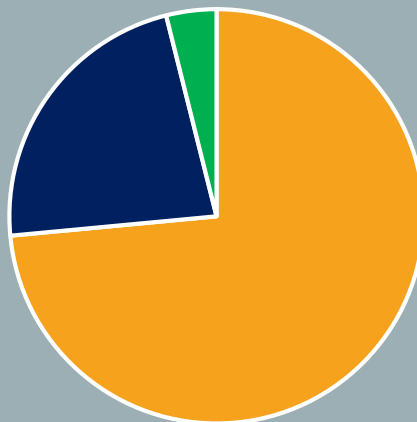
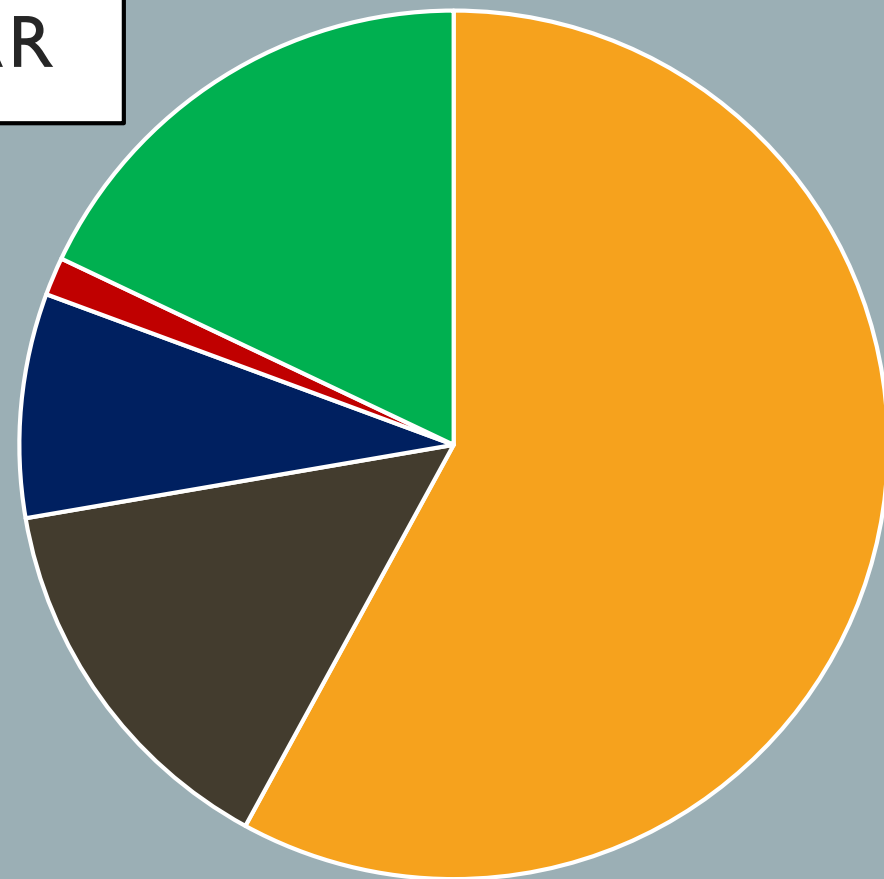
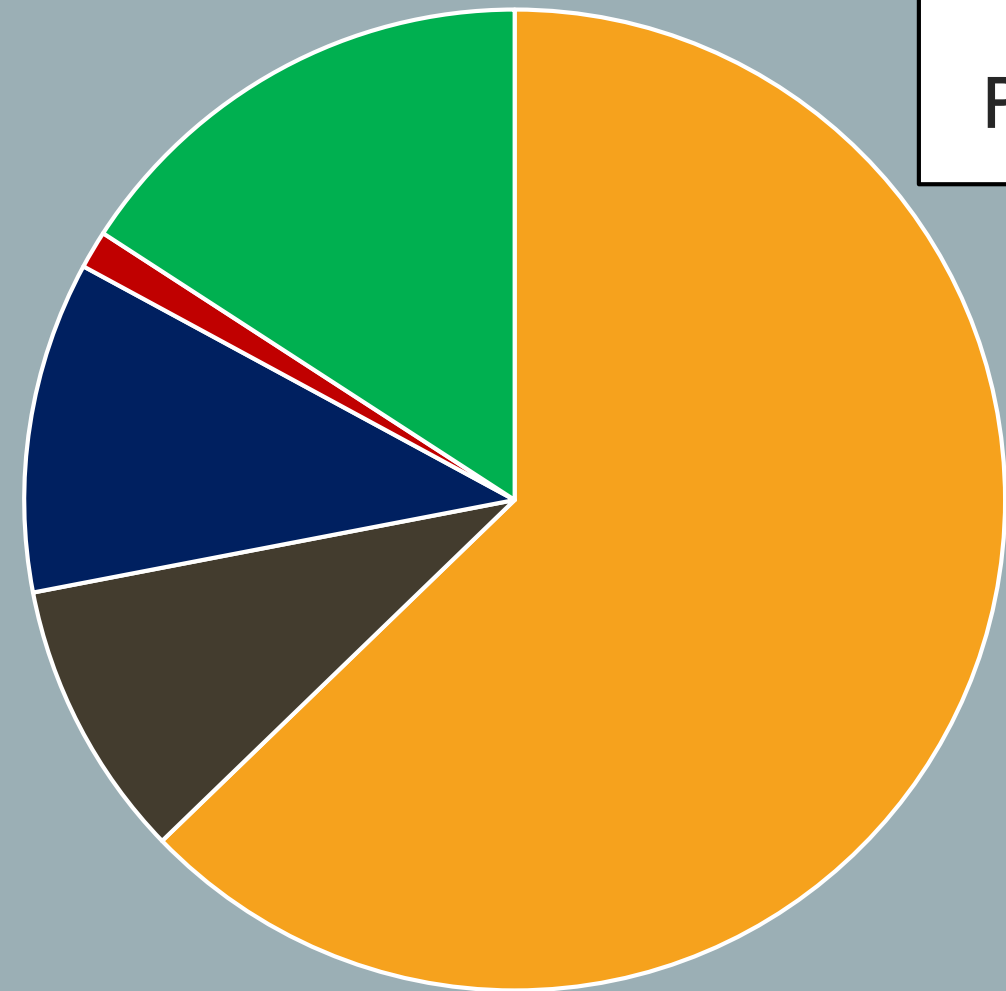
Reductions

122.0 M lbs.

107.4 M lbs.

14.6 M lbs.

■ Agriculture ■ Developed ■ Wastewater ■ Septic ■ Natural





17 million pounds
\$187 million annually

PHASE 3 RECOMMENDATIONS - AG

Compliance with Existing Regulations

Soil Health

Nutrient Management

Manure Storage

Dairy Feed Management

Grass Buffers

Systems for Excess Manure



PHASE 3 RECOMMENDATIONS - STORMWATER

Fertilizer bill

Current MS4 compliance

Illicit Discharge Control

Industrial Stormwater

Current E&S and Post-Construction
Stormwater Requirements

607,000 pounds
\$60 million annually



5 million pounds
\$53 million annually

PHASE 3 RECOMMENDATIONS - FORESTRY

Riparian Forest Buffers

Habitat

Stream Restoration

Natural Area Conservation

Tree Canopy



Total Need: \$521 M Annually
GAP: \$324 M ANNUALLY

NEW DEDICATED WATER FUND

PHASE 3 RECOMMENDATIONS - LEGISLATIVE

New Dedicated Water Fund

Establish a Nutrient Procurement Program (SB 575)

Enact the Fertilizer Bill

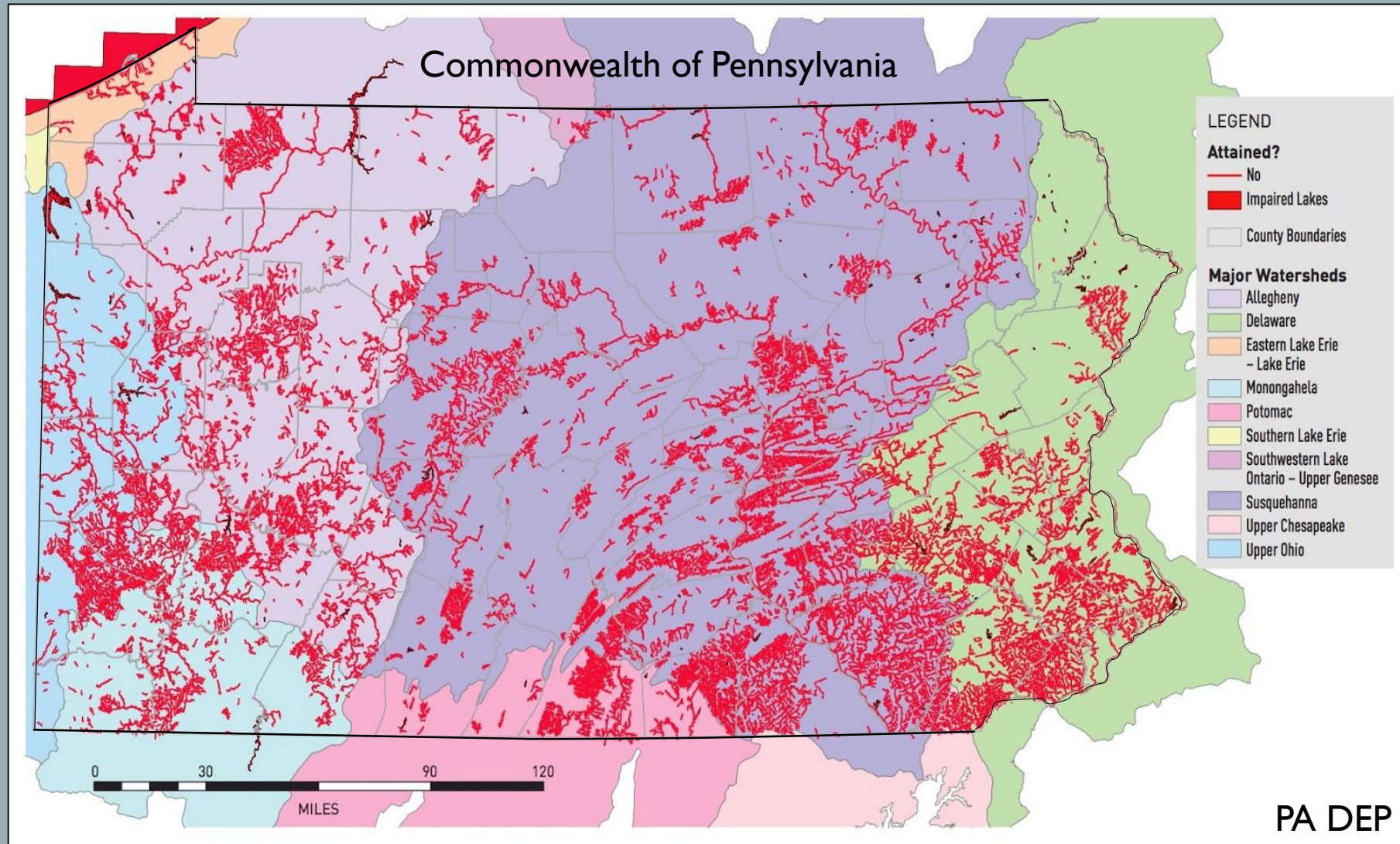
Remove prohibition against stream fencing in Clean Streams Law

Amend Right-to-Know to protect farmer information

Restore Act 167 Funding

Revise Local Procurement Limits to Facilitate P3s

A Statewide Problem Needs a Statewide Solution



THANK YOU

Ann Swanson
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SUSQUEHANNA RIVER
BASIN COMMISSION

NY ■ PA ■ MD ■ USA

Testimony of Andrew D. Dehoff
Executive Director
Susquehanna River Basin Commission

on

Waters of Pennsylvania

House Democratic Policy Committee
Chairman Mike Sturla and Members

October 21, 2019
10:00 a.m.

Introduction

In the late 1960s, a broad group of concerned citizens saw the need for a federal-interstate coordinating agency to lead the conservation, development, and administration of the Susquehanna River Basin's water resources that would preserve and enhance its value as a scenic and recreational asset for the people who live in the Basin. The need to coordinate these efforts, along with those of three states and the agencies of the federal government, led to the drafting of the Susquehanna River Basin Compact, which was signed on December 24, 1970. The Compact, as adopted by the Congress of the United States and the legislatures of New York State, Pennsylvania, and Maryland, provides the mechanism to guide the water resource management of the Basin. The Compact, which went into effect on January 23, 1971, also established the Susquehanna River Basin Commission as the agency to coordinate these water resource efforts.

Each member state/jurisdiction is represented by a commissioner who serves as the spokesperson for the government that he or she represents. In the case of the federal government, the commissioner has been identified in legislation as the Division Engineer, North Atlantic Division, U.S. Army Corps of Engineers. For the three states, the commissioners are the governors or their designees. The commissioners also appoint alternate commissioners.

The commissioners, or their alternates, meet quarterly to act on a variety of programmatic and administrative matters, including applications for projects using water; adopting regulations, policies and budgets; and enacting various planning and management activities. Each of the four commissioners has a single vote.

The commissioners, subject to the provisions of the Compact (Section 15.1(b)(3)), establish Commission By-Laws to govern its operation. Under the leadership of the Executive Director, technical and administrative personnel support the daily operations of the Commission.

Statement of Mission/Goals

The mission of the Commission, which is defined in the Compact, is to enhance public welfare through comprehensive planning, water supply allocation, and management of the water resources of the Susquehanna River Basin.

To accomplish this mission, the Commission works to: reduce damages caused by floods; provide for the reasonable and sustained development and use of surface and ground water for municipal, agricultural, recreational, commercial and industrial purposes; protect and restore fisheries, wetlands and aquatic habitat; protect water quality and instream uses; and ensure future availability of flows to the Chesapeake Bay.

The goals of the Commission are:

1. To be responsive to water resource management needs of the Commission's signatory members.
2. To provide excellent service to the public.

3. To coordinate management of interstate water resources and serve as an effective forum for resolution of water resource issues and controversies within the Basin.
4. To be a leader in issues concerning the conservation, utilization, allocation, development, and management of water resources within the Susquehanna River Basin.
5. To encourage excellence in staff by affording opportunities for professional growth and development and by providing a stimulating work environment for all Commission employees.
6. To provide public information and education about the water resources of the Basin.

Comprehensive Plan and Water Resources Program

The Commission, subject to the provisions of the Compact (Sections 3.3 and 14.1), developed the Comprehensive Plan for the Water Resources of the Susquehanna River Basin. The Comprehensive Plan provides a framework for the Commission to manage and develop the Basin's water resources and serves as a guide for all Commission programs and activities.

The Commission, subject to the provisions of the Compact (Section 14.2), also annually adopts a Water Resources Program to implement various goals and actions identified in the Comprehensive Plan. The Water Resources Program consists of projects that the Commission, other agencies, and the private sector, plan to undertake to help meet the water resources needs of the Basin.

Assisting the Commonwealth with Chesapeake Bay Restoration – SRBC's Sediment and Nutrient Assessment Program (SNAP)

SRBC's Sediment and Nutrient Assessment Program sampling network is an integral part of the Chesapeake Bay Program's Non-tidal Water Quality Monitoring Network. The SNAP network consists of 26 sites monitored for various nitrogen and phosphorus species and suspended sediment. Data are used to quantify the amount of nitrogen, phosphorus, and suspended sediment transported at each site and to calculate trends in loads and concentrations. The Chesapeake Bay Program Quality Assurance: Nontidal Water Quality Monitoring Program web page provides a means to explore the network and the results of a variety of data analyses.

Sampling Sites

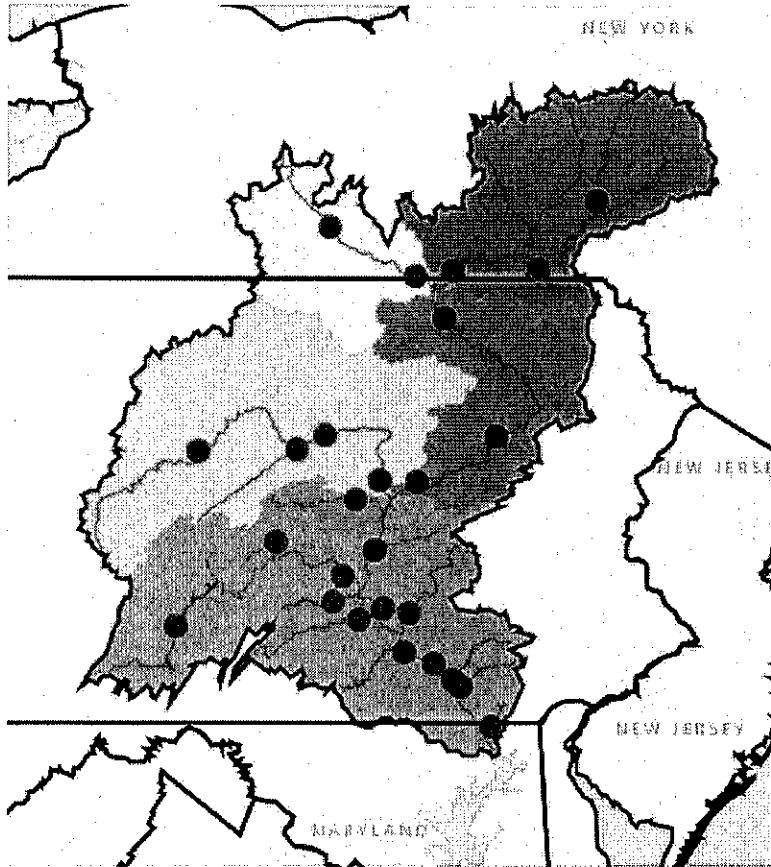
Begun in 1984, the initial Sediment and Nutrient Monitoring Program (SNAP) network consisted of two mainstem sites on the Susquehanna River and 10 tributary sites. Since 1989, several modifications to the network were made including adding 20 sites as part of the CBPO non-tidal water quality monitoring network. The current SNAP network consists of six sites on the mainstem of the Susquehanna River and 20 tributary sites. The 26-site network contains five sites in New York, 20 in Pennsylvania, and one in Maryland.

Analyses

- Concentration: amount of a constituent per volume water typically milligrams per liter
- Load (aka Flux): actual mass of the constituent being transported in the water column past a given point over a specific duration of time, expressed in units of mass/time

- Yield: the load divided by the acres within the watershed above the monitoring sites, expressed as pounds or kilograms per acre
- Trend: measure of the change in load or concentration over a given time period
- Weighted Regressions on Time, Discharge, and Season (WRTDS): USGS model used to calculate loads and trends
- Flow Normalization: a method utilized by WRTDS to remove the effects of hydrology on constituent loads and concentrations

Monitoring Sites in the Susquehanna River Basin



Reports

- [2017 Nutrients & Suspended Sediment in the Susquehanna River Basin](#)
- [Related Publications](#)

Phase III Watershed Implementation Plans Assistance

SRBC has been assisting PADEP with development of its Phase III Watershed Implementation Plan (WIP) that outlines the actions needed to meet PA's nutrient and sediment goals under the Chesapeake Bay TMDL. Specific tasks included providing technical support for: 1) analyzing and interpreting pollutant monitoring data, 2) developing recommended pollutant reduction strategies, and 3) assisting PA's stakeholder workgroups with integrating all the information for the development of county-based implementation strategies to meet the Bay TMDL 2025 goals.

All parties involved acknowledge that an ongoing challenge will be securing resources for the amount of work needed to implement “on-the-ground” measures needed to achieve reductions.

Other water quality issues facing the Commonwealth

Although the Commission does not regulate water quality, it fulfills a critical role in monitoring conditions in a consistent, watershed-based manner, across jurisdictional boundaries. As such, SRBC scientists collect and analyze data from streams to address a range of water quality challenges in the Basin, coordinating with agencies and other stakeholders to ensure the scientific data and interpretations generated by SRBC scientists best inform decision makers on the sound management actions needed to prevent or resolve water quality issues.

SRBC’s Monitoring and Protection (M&P) scientists monitor streams for a diverse set of projects and purposes. Several projects are funded largely through U.S. Environmental Protection Agency (USEPA) grants to study the health of streams within the Basin, including broad assessments of water quality within each of the six subbasins, evaluations of Basin streams that cross state lines, and investigations of large river systems and reservoirs in the lower portion of the Basin. The Commission also monitors the river in real-time for water chemistry changes that could affect public water suppliers. USEPA funding is also used to investigate local or regional issues of concern or to identify and fill identified data gaps.

With funding from member states New York, Pennsylvania, and Maryland, the Commission focuses on activities that are aimed to improve water quality along impaired streams. M&P scientists work to restore streams affected by mine drainage in the Basin. The Commission supports a web portal that contains mine drainage data collected by several different agencies and organizations. M&P scientists have developed Total Maximum Daily Loads for more than 50 watersheds in Pennsylvania and have worked with agencies to identify sources and causes of impairments of Basin watersheds in Maryland.

M&P scientists conduct research projects funded internally by Commission user fees or through awarded grants. Current research projects focus on effects of natural low flow on stream habitat and aquatic life, presence and distribution of aquatic invasive species, effects of the reintroduction of American eel throughout the Basin, proposed flow releases to improve downstream conditions during periods of low flow, and implementation of Best Management Practices (BMPs) for stormwater control and improvement. The Commission also assists county and local governments and other organizations with technical experience and participates in community outreach and educational events.

M&P scientists also help provide science-based results to guide regulatory decisions regarding shale gas drilling activities within the Basin. Scientists routinely assess streams proposed for water withdrawals and reassess streams when a water withdrawal permit is due for renewal. Scientists also research how established water withdrawals affect the habitat and aquatic life of the streams. The Commission continuously monitors water quality conditions at about 60 sites on a real-time basis to track changes that might be related to natural gas drilling activities. The Commission supports a website that presents these data in real-time for public access. M&P

scientists also routinely study the biological, physical, and more extensive chemical characteristics of these sites through regularly scheduled sampling.

Mine Drainage Program

The Mine Drainage program involves assessment and planning initiatives that lead to design and construction of mine drainage treatment systems and mine land restoration projects throughout the Basin.

This program is focused on activities that could lead to the restoration of impaired stream miles that are on the PA Department of Environmental Protection's (PADEP's) Integrated List of Impaired Waters and lands that are classified as Abandoned Mine Lands in PADEP's Abandoned Mine Land Inventory.

For more information on the Commission's mine drainage activities, please see the following:

- [Mine Drainage Portal](#) - this portal provides data compiled as part of the Commission's efforts to assess and track impacts to water quality from mine drainage in the Basin.
- [Reports Library](#)

Lower Susquehanna Source Water Protection Partnership

The Lower Susquehanna Source Water Protection Partnership (Partnership) was formed in 2012 to examine ways in which agencies and organizations can collaborate to address common issues and challenges related to protecting sources of drinking water on a regional scale.

The Partnership now has more than 40 organizations that meet twice a year to utilize their shared knowledge and technical expertise.

Remote Water Quality Monitoring Network

The Commission initiated the Remote Water Quality Monitoring Network (Network) in January 2010. The Network continuously measures and reports water quality conditions of smaller rivers and streams located throughout the Basin. The data help the Commission track existing water quality conditions and any changes on an ongoing, real-time basis.

The Network initially monitored streams in areas where natural gas development is active or could potentially become active. Recently, the Network has expanded to cover PA and NY to monitor general water quality conditions.

The Network provides constant data collection with instruments sensitive enough to detect subtle changes in water quality on a frequency that will allow background conditions and any changes to them to be documented throughout the year. The following five water quality parameters are being measured at each station:

- Temperature
- pH – the measure of acidity or alkalinity, with normal ranges between 6 and 9

- Conductance – the ability of the water to conduct electricity, which typically reflects the amount of dissolved solids or chlorides in the water
- Dissolved oxygen – amount of oxygen in the water available to aquatic life, with levels best above 4-5 mg/L
- Turbidity – water clarity, or the amount of particulate matter in the water column

Ten monitoring stations were installed on state forest lands in 2011. The data sondes at each station monitor the above parameters at 15 minute intervals. Data are posted on a public website as provisional data (www.srbc.net/remotewaterquality/). Stations using satellite telemetry post a 4-hr average every four hours while stations using cellular telemetry post each 15-minute reading every two hours to the website. The continuously monitored parameters are supplemented by frequent discrete water quality sampling as well as biological community assessments, including fish and aquatic macroinvertebrates.

Conclusion

SRBC remains poised to serve in partnership with the Commonwealth in meeting its water quality goals. Based on authorities provided the Commission in the Susquehanna River Basin Compact, our interest in complementing DEP and other agency initiatives, and the expertise and resources on hand, SRBC is best positioned to serve as a catalyst for new initiatives, a collaborator in community engagement, and a provider of monitoring and assessment.

As it relates to the Chesapeake Bay, but also pertaining to broad water quality goals, the Commission will continue to seek to initiate or become involved in projects that demonstrate “stacked benefits” that achieve multiple goals surrounding local water quality, stormwater management requirements, flood mitigation, groundwater recharge, and source water protection.

While the Commission has been able to earmark some funds and resources to undertaking such projects, the reality is that limited success can be accomplished without adequate funding. However, there is “strength in numbers” and the Commission is adept at using seed money to secure grants, to bring additional funding partners to the table, and at piloting demonstration projects that build foundations for further improvements.

Pennsylvania Fish and Boat Commission

House Democratic Policy Committee

Public Hearing on the Waters of Pennsylvania

October 21, 2019

Testimony by:

Michael J. Nerozzi, Director of Policy and Planning

Good morning, Chairman Sturla, Representative Daley and members of the Committee. Thank you for the opportunity to participate in today's hearing. As a Commonwealth natural resource agency with a mission to: "*Protect, Conserve and Enhance Pennsylvania's Aquatic Resources and Provide Fishing and Boating Opportunities*," the Pennsylvania Fish and Boat Commission (Commission) has an important role in keeping the Commonwealth's waters clean, both for the health of aquatic species and the enjoyment of our nearly 3 million anglers and boaters. Here in Pennsylvania, we are fortunate to have an abundance of water resources, including over 99,000 acres of lakes and over 85,000 miles of rivers and streams, which is second only to Alaska. But to whom much is given, much is expected. That is why Commission staff are hard at work every day to ensure the quality of our waterways is conserved for future generations.

To describe the entirety of the Commission's work in this area would take far longer than the time we have available. But I would like to provide a brief overview of the programs and initiatives that we feel have the greatest impact on water quality. Perhaps most notably, the Commission has cooperative role in developing the Department of Environmental Protection's (DEP) Chapter 93 Water

Quality Standards, which safeguard streams, rivers and lakes from human impacts. Each year, our fisheries biologists conduct hundreds of surveys on streams throughout the Commonwealth to document the presence of wild trout, which are an important indicator species for water quality. Depending on the biomass present, a stream may be eligible to receive upgraded protections from wastewater discharges and other sources of pollution. In total, over 16,000 miles of stream are managed for wild trout in Pennsylvania, and less than 16% are designated as Class A wild trout streams. These prized waters are eligible for a “High Quality” designation under Chapter 93, which helps ensure these productive waters are sufficiently protected.

The amount of time and resources that go into surveying for wild trout is considerable and, as many of you know, the Commission is a relatively small agency. It is important, then, to acknowledge the valuable contributions of our partner organizations through the Unassessed Waters Initiative. Under this program, colleges and universities, research entities, and conservation organizations examine waters that have not been inventoried for wild trout. These organizations use Commission sampling protocols and work in high priority watersheds. In recent years, roughly 850 waters have been surveyed annually under this program. Our work on behalf of water resources, however, goes well beyond these successful wild trout programs.

The Commission’s Division of Environmental Services works proactively with expert scientists and engineers from a variety of disciplines to ensure that all aquatic life, including threatened and endangered species, remain protected. Our staff review thousands of permit applications every year for many program areas including transportation, mining, natural gas and aquatic pesticide use. We review state and federal laws and regulations that could have an impact on jurisdictional

species and routinely comment on water quality, habitat and instream flow protection issues.

In addition, the Commission's network of nearly 100 Waterways Conservation Officers (WCOs) respond to pollution and habitat disturbances throughout the Commonwealth. Our officers have conducted field investigations on over 1,500 suspected water pollution incidents since 2011. I am happy to report a class of 27 cadets are currently going through the year-long training process and will be in the field across Pennsylvania next summer, allowing us to serve anglers and boaters in your districts better than we have been able to for many years.

The Commission has adapted to our changing economy and domestic energy portfolio. In 2012, as Pennsylvania was experiencing the rapid expansion of natural gas production and a large influx of permitted activities, the General Assembly saw the value in proactively working to avoid conflicts with aquatic resources and directed \$1 million annually from Act 13 to our agency for costs associated with natural gas permit reviews. The Commission developed a dedicated team of biologists to assist DEP and the U.S. Army Corps of Engineers with activities related to unconventional drilling in-or-around waterways and wetlands. This includes reviewing and commenting on the construction of access roads, pipelines, well pads, water withdrawals and other infrastructure projects to ensure minimal impact to aquatic life. This program has proven to be highly successful and has led to cooperative relationships with both industry representatives and partner agencies.

The last 10 years has also brought a renewed focus on the health of the Chesapeake Bay Watershed, and more specifically, the health of the Susquehanna River. The Commission has taken a prominent role in this process by conducting

cost-effective habitat work throughout the watershed, including stream bank stabilization, restoration of riparian corridors and removal of obsolete dams to help return waterways to their natural, free-flowing state. We've worked with local farmers to install streamside fencing, livestock crossings and other inexpensive best management practices that benefit downstream ecosystems, as well recreational users that rely on clean water. In fact, the Commission is currently working with EPA and DEP to nearly triple the size of our stream habitat section so we can continue assisting the Commonwealth with meeting our TMDL requirements within the watershed.

Finally, I'd like to stress that clean water doesn't just benefit the environment and public health, it also benefits our economy. According to a study conducted last year by the Theodore Roosevelt Conservation Partnership (TRCP) anglers contribute nearly \$1.2 billion to the Pennsylvania economy, both through consumer spending and the 7,000 jobs that are supported by fishing. These contributions are predicated on abundant populations of trout, bass, walleyes and other popular game species which rely on clean water. In a separate poll, TRCP found that 76% of sportsmen believe rivers and streams are "essential to the local economy." These figures further illustrate the importance of conserving, protecting and enhancing the aquatic resources we have been entrusted with in Pennsylvania.

Thank you for providing me with the opportunity to testify. I'll be happy to answer any questions.



PennFuture

Testimony of Jacquelyn Bonomo

President & CEO, Citizens for Pennsylvania's Future (PennFuture)

Monday, October 21, 2019

10:00AM, 418 Main Capitol Building, Harrisburg

Chairman Sturla, Representative Daley, and Members of the House Democratic Policy Committee, I want to thank you for this opportunity to testify at this public hearing. I am the President and CEO of PennFuture, a statewide environmental advocacy organization that currently represents more than sixty thousand members and supporters. We strongly support adequate funding for our agencies tasked with environmental protection, responsible enforcement of environmental laws, and the advancement of new policies that protect public health and natural resources for our Commonwealth's citizens today and into the future.

Pennsylvania's Clean Water Crisis

Pennsylvania has long held the position of being home to some of the most beautiful streams, creeks, and rivers in the country, but the Commonwealth has an equally long history of environmental degradation and water quality challenges. The need for protection and restoration of Pennsylvania's waters is not unique to one watershed or basin: each corner of the state and the four watersheds that encompass them are affected by dirty water.

On a regular basis, the Great Lakes Basin has to deal with harmful algal blooms which are largely caused by agricultural runoff. The waters of the Ohio River Basin have been heavily contaminated by legacy industries—from coal, oil and steel and now face emerging threats from gas, and petrochemical industries in Western Pennsylvania.

Regarding the Chesapeake Bay watershed, including the Susquehanna and Potomac River Basins, Pennsylvania is poised to miss its EPA Phase III Watershed Implementation goals for 2025 for the reduction of phosphorus, nitrogen, and sedimentation, caused predominantly by non-point source agricultural and stormwater pollution. While the headwaters region of the Delaware River basin boasts some of the Commonwealth's cleanest waters—most being High Quality and Exceptional Value streams—overdevelopment and impact from growth in suburban and urban areas continues to put clean water at risk in the eastern portion of the state.

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Website: www.pennfuture.org

In accordance with the federal Clean Water Act, the Pennsylvania Department of Environmental Protection released its 2018 Integrated Water Quality report this summer. This report finds that Pennsylvania is home to more than 85,000 miles of streams and rivers. What's astonishing is this year's report reveals that now nearly 43% of Pennsylvania's waterways are impaired. Pennsylvanians rely on this water for drinking, recreation, fishing, and swimming, yet more than 37,000 miles are impaired.

This is not acceptable, and real investment and attention from the Legislature can go a long way in addressing this problem. We need our state executive branch agencies and the General Assembly to take this seriously.

Best Management Practices Transform Local Impaired Waterways

Funding for conservation projects makes a real, tangible difference in the quality of Pennsylvania's waterways. Implementation of best management practices, or BMPs, such as planting forested riparian buffers, installing streambank fencing, retrofitting impervious surfaces, modernizing barnyards, and creating bio-swales, makes significant impacts on the quality of our water and can accrue positive benefits to our major industries particularly agriculture, tourism and recreation.

A few examples of BMP success stories across the state include:

- *Brady & Warrior's Mark Townships in Huntingdon County*
 - Warrior's Mark Run is a stream in Huntingdon County (classified as a high-quality cold-water fishery) that has been polluted by grazing cows from nearby farms; cow manure overloads the water with nutrients, disrupting aquatic ecosystems and killing fish and other animals. The Huntingdon County Conservation District was awarded \$215,550 in March 2010 to implement agricultural best management practices in two watersheds. These watersheds were specifically identified as impaired by siltation from lack of grazing practices. BMPs include cattle walkways, 10,000 feet of interior/exterior/streambank fencing, stream crossings, and spring developments, which restored a stretch of 2,331 feet of stream, protecting drinking water and aquatic habitat.
- *Borough of Ambler in Montgomery County*
 - In December 2017, Ambler was awarded \$206,100 for the Borough to implement stormwater management BMPs on public land. Ambler is using this money to install 75 rain gardens, 250 rain barrels, 250 downspout planters, 2,000 feet of riparian buffers, and stabilizing a slope to prevent erosion. This project is set to make significant improvements in the Borough economically and for clean water due to mitigating run-off.
- *Etna Borough in Allegheny County*
 - In January 2015, Etna Borough was awarded \$554,936 to construct urban stormwater controls incorporated in a Green Streets design. Scope of work included the reconstruction of streets/sidewalks, addition of areas of

porous pavements, creation of a "rain park" or storm water infiltration site, underground storage of stormwater for slow release, and vegetated planting areas. The project addressed issues related to storm water control and also minimized storm water flow into a current combined sewer system. This installation of these BMPs focused on urban and residential non-point source pollution reduction, including tons of sedimentation and debris.

Legislative Threats & Opportunities

Keeping clean water clean, and investing in restoration of impaired waters makes economic sense for our state. But in recent years, these investments have fallen off dramatically and benefits made from Growing Greener I and II – are far off in our rear-view mirrors. We urge the General Assembly to pass legislation that:

- *Provides adequate funding for state resource agencies*, such as the PA Department of Environmental Protection and the PA Department of Conservation and Natural Resources, to do their jobs.
- *Establishes a dedicated fund for watershed restoration* with a reliable, fixed funding mechanism.
- *Restores full-share funding to Pennsylvania's interstate river basin commissions*, such as the Great Lakes Commission, the Delaware River Basin Commission (DRBC), the Susquehanna River Basin Commission (SRBC), the Ohio River Valley Water Sanitation Commission (ORSANCO), and the Interstate Commission on the Potomac River Basin Commission (ICPRB).
- *Empowers all classes of municipalities to reduce the impacts of stormwater runoff* by enacting stormwater fees.
- *Sets standards and training expectations for fertilizer application.*
- *Renews Growing Greener Program funding for the installation of best management practices* for municipalities and non-governmental organizations doing the on-the-ground work via technical assistance and projects.

Further, the Legislature must guard against attempts to undermine water protection, enforcement, and regulations that are currently—and regularly—before the General Assembly, such as:

- *Senate Bill 619* (in House Environmental Resources & Energy Committee), which amends the state's Clean Streams Law to narrow the definition of "pollution." As written, the new definition would not consider a spill or discharge to waters of the Commonwealth as pollution, if it does not cause a violation of a numeric surface water standard in Chapter 93. This redefinition also eliminates the need for the reporting of spills unless they are first determined by the polluter to meet this severely limited definition of pollution.
- *House Bill 1635 (Senate Bill 790)*, which would roll-back clean water regulations for the conventional oil & gas drilling industry. This bill would promote the application of waste fluids from drilling on roads in Pennsylvania, jeopardizing the quality of our headwaters streams and, should one's water be contaminated,

the industry would not be required to replace drinking water meeting the Safe Drinking Water Act Standards.

- *The “Energize PA” package of bills (specifically, House Bills 1102, 1106, 1107), which subsidizes the oil, gas, and petrochemical industries to grow their plastics production in Pennsylvania; the Commonwealth would lose tens of millions of dollars, not to mention the rapid acceleration of output of greenhouse gases and volatile organic compounds (VOCs) to the rate of millions of tons per year. This package of bills would also undermine the DEP by peddling “deemed approval” language for permit applications if agency staff don’t take action in 30 days and set-up a new bureaucracy to review permits, risking thousands of DEP jobs, and virtually rubber-stamping permits.*

Pennsylvanians Deserve Clean Water, Guaranteed by our State Constitution

On May 18, 1971, Pennsylvania’s voters by a four-to-one margin ratified what is now Article I, Section 27 of our state constitution—the Environmental Rights Amendment:

“The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment. Pennsylvania’s public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people.”

Chairman Sturla, Representative Daley, and Members of the House Democratic Policy Committee, PennFuture wholeheartedly agrees with Pennsylvania’s own Environmental Rights Amendment and its supposition that all Pennsylvanians—no matter place, station, agency, or background—have a right to clean water.

We stand ready and are eager to help the General Assembly advance clean water legislation, solve the funding shortages and move forward clean water funding, and fight back against dangerous attempts to weaken our precious resources.

Thank you for your time and please continue to use us as a resource.

Respectfully submitted,

Jacquelyn Bonomo, President & CEO
Citizens for Pennsylvania’s Future (PennFuture)

For more information and questions, please reach PennFuture’s Director of Policy, Ezra P. Thrush, MPA at thrush@pennfuture.org or 717.214.7926 (o) & 717.830.6279 (c).

Waters of Pennsylvania Public Hearing, Harrisburg PA, October 21, 2019

I first would like to thank Representative Daley for holding this hearing. My name is John Stolz, I am a professor and director of the Center for Environmental Research and Education at Duquesne University. I live at 905 Pictwood Drive, Glenshaw 15116. I am here to testify on water quality issues affecting the waters of Pennsylvania.

In my forty plus years in environmental microbiology, I have studied fresh water, marine, and extreme environments. The focus of the research has been on microbes that metabolize toxic metals like arsenic, selenium, and chromium as well as nitrate and iron. The work has been funded over the years by the National Science Foundation, US Environmental Protection Agency, USDA, Department of Energy, NASA, and the National Institutes of Health. I have published 90 peer reviewed papers, 39 book chapters, and co-authored/edited two books.

Since late 2009, I and my students have studied the environmental impacts of unconventional gas and oil extraction with emphasis on water quality, both surface and ground water. The first project, a baseline study of two streams in the Ten Mile Creek watershed, was conducted between May of 2010 and November of 2012 in collaboration with research groups at the University of Pittsburgh, Carnegie Mellon University, and the Carnegie Museum of Natural History. The second project, on water quality in Southwestern Pennsylvania, began in August 2011 and continues to today. A third project, 3 Rivers Quest, is a collaboration with West Virginia University and West Liberty University, where we regularly sample sites on the Allegheny, Monongahela, and Ohio rivers. These projects have to date resulted in 14 master's theses, 2 research reports, and 6 peer reviewed manuscripts. The good news is, we still have extraordinary high quality water sources in Pennsylvania. The bad news is that many sources have been impacted by past coal, oil, and gas extraction or face new threats from the development of the Marcellus and Utica shales and the emergent petrochemical industry. Over the last 8 years, I and my students have interviewed hundreds of Pennsylvanians with private well water and collected and analyzed over 1,100 water samples. We have also conducted file reviews at the PA DEP, of permits and completion reports, to assemble detailed maps of oil and gas activities in our study areas. I will briefly summarize some of the results.

Well water contamination

The Woodlands is a community of about 200 families in Butler County north of Pittsburgh. 32 unconventional Marcellus wells on 12 pads were drilled between 2009 and 2012 surrounding the community. I was contacted by a homeowner in late summer of 2011 to test their well water. My group subsequently conducted a survey of 143 households and of them 56 (39%) indicated their water had changed in quality or quantity since the drilling began. Because of the varying depths of the water wells, from 65' to 900', there was no discernable pattern of contamination. Of the 33 homes we tested, 25 had levels of manganese above the EPA secondary standard for drinking water. We were able to obtain predrill data for several homes and establish that the water quality had indeed changed. This study was published in 2015. 10 families filed a suit against the drilling company in 2013, and this past year, settled and were

awarded \$159,000. Today 50 families still rely on a volunteer water drive by the local church for their water.

Complaints to Oil and Gas

Public Herald, a non-profit media outfit for which I have served as a science advisor, discovered that between 2004 and 2016, there were 9,442 complaints filed with the PA DEP Oil and Gas office. Of these, it was determined that over 4,100 were water related. My group did a follow up and found that between 2017 and 2018 there were an additional 1,397 complaints. There have been 11,767 unconventional wells drilled in Pennsylvania since 2004 and in that time there have been 10,839 complaints with over 40% of them related to water issues.

Investigation into specific complaints revealed that the PA DEP has been using suite codes to limit the amount of information in the water test results provided to the homeowners. It also revealed that detection limits the PA DEP is using for certain tests are higher than those reported for the US EPA methodology. The result is that key constituents related to oil and gas drilling contamination, such as bromide, have been reported as “BDL” or below detection limits. In other instances where toxic compounds have been detected, no action has been taken if they are below the EPA’s maximum contaminant levels. Lastly, we found that only 54% of the water complaints were resolved within the legally required time frame.

Injection wells

My group has conducted a well water survey in Grant Township, Indiana County. This was done in anticipation of a permitted injection well facility. I discovered that water well testing is not required prior to the onset of operations of an injection well. Thanks to great community engagement, we were able sample 39 private wells, 15 of which were within 1 mile of the proposed injection well. Our results indicate that, in general, the wells are potable and high quality at that. It is beyond my comprehension, then as to why the PA DEP has taken legal steps to force this township to allow the injection well as they have no access to public water.

Drinking water

The improper disposal of oil and gas wastes, both solid and liquid, continues to pose a threat to public drinking water sources. The practice of allowing publicly owned sewage treatment plants, also known as POTWs, was prohibited in 2012 after it was discovered that it was impacting the discharge from these plants into public waters. The increase in total dissolved solids and bromide in particular was causing problems for public drinking water authorities. Carcinogenic trihalomethanes were being generated during the chlorination process. The prohibition initially led to a decrease in bromide levels in the three rivers, but this problem has reemerged over the past few years. The PA DEP allows drilling wastes, both solid and liquid to be taken to sanitary landfills, up to 80% volume per day. The solids, such as drill cuttings are buried along with municipal waste and used as cover. The liquids, which may contain drilling fluids, flowback, and produced water, are “immobilized” and buried along with the municipal waste. This past April I met with the manager of the POTW in Belle Vernon. They had been receiving leachate from the Rostravor land fill, from 100,000 to 300,000 gallons a day. The leachate was so toxic, it killed the microbial population that was supposed to treat the sewage. My analysis of the leachate showed it was similar in composition to produced water from

fracking, having high chloride and bromide levels, as well as radioactive radium. The discharge from the POTW, which I collected at the time, also had similar constituents, including bromide and radium, although more dilute. This discharge exceeded the permitted amount of total dissolved solids by almost 3 times and was going directly into the Monongahela River. The Charleroi drinking water facility is just a half mile down stream. So it wasn't too surprising to discover that they have been having issues with trihalomethanes since at least 2015. Thanks to a court injunction, the POTW is no longer receiving leachate from the landfill and are now back in compliance for their discharge. I confirmed this when I visited the plant and took samples at the end of May.

There are at least 16 sanitary landfill in Pennsylvania that are reported to be taking oil and gas wastes. It is clear to me that this practice is affecting the quality of the leachate, rendering it more toxic and radioactive. Further, allowing this leachate to be disposed of at POTWs threatens the operation of these facilities and is facilitating the discharge of oil and gas wastes into the waters of Pennsylvania. I encourage you to support the legislation proposed by representative Innamorato.

Thank you.

John F Stolz, PhD

Testimony of Russ Collins, Vice President of the South Central Region, Pennsylvania Council of Trout Unlimited, before the Pennsylvania House Democratic Policy Committee

Public Hearing on the Waters of Pennsylvania | October 21, 2019

Good morning, my name is Russ Collins. I am currently in my 5th year as President of Doc Fritchey Chapter of Trout Unlimited, which serves Dauphin and Lebanon County here in Central Pennsylvania. I am now in my second year as South-Central Region Vice President for Pennsylvania Council of Trout Unlimited. Our 14,000 members statewide have as our mission to conserve, protect, reconnect and restore coldwater fisheries and their watersheds.

In the 9 years since retiring after 30 years in the financial services industry, I've dedicated my time (my wife thinks I have a full-time job) to restoring and caring for the coldwater fisheries in Dauphin and Lebanon Counties. It is my hope to pass along to subsequent generations the enjoyment of fishing and the importance of protecting our Coldwater resources.

As part of the Unassessed Waters Initiative, Trout Unlimited has partnered with Pennsylvania Fish and Boat to sample more than 800 miles of streams for wild Trout. We have submitted over 1500 public comments since 2017 in favor of upgrading streams.

As a grassroots conservation organization, we depend on the Environmental Stewardship Fund, also known as Growing Greener funds. My chapter received more than \$400,000 since 1999 and leveraged \$30,000 in matching funds to restore the Spring Creek watershed in Dauphin County, creating a wild trout fishery here in Harrisburg. 3 years ago, my chapter undertook a restoration project on the Lower Snitz Creek in the Cleona area of Lebanon County, restoring a 1/3rd mile section of this creek. For this project, we received a \$115,000 grant from Pennsylvania Fish and Boat Commission. In addition to those dollars, we received matching funds, native trees and shrubs for the buffer along the creek and many volunteer hours, valued at more than \$50,000.

Our chapter has established a strong partnership with the Quittapahilla Watershed Association, working on the systematic restoration of this watershed. There are currently three projects underway that will restore almost a mile of various tributaries in the watershed. The results of all this work will lead to enhancement of habitat for trout in these waters. The formula goes . . . better habitat, more fish, more fishing fun!

Our chapter is not alone in this effort. Our 49 statewide chapters have spent tens of thousands of hours participating in local conservation and education projects, and that was just in 2019. Chapters across the state provide educational and fishing opportunities for our veterans, introductory courses on fly fishing for women, and kids fishing days. Partnering with Pennsylvania Fish and Boat Commission we sponsor the Trout in the Classroom program. A 55-gallon tank is put in the classroom, equipment to cool and aerate the water is installed and then trout eggs are shipped to the schools. The children then learn the ins and outs of raising trout. In the spring they go on an outing to release the fingerling trout in a local streams.

Trout Unlimited also relies on Growing Greener funding to provide assistance to municipalities, watershed organizations and conservation districts to clean up more than 200 abandoned mine

lands. We still have 287,000 acres and 5,000 miles of streams to cleanup. Bottom line, recent cuts hurt this effort and these cuts need to be restored.

Protecting and restoring streams only goes so far. Sound legislation to protect our work is just as important. Protecting and restoring our waters after damage occurs is time consuming and costly. I reference Senate Bill 619, which changes the definition of pollution by no longer mandating reporting of “accidental spills” of pollutants that don’t have a numeric water quality value. In addition, it leaves the decision to report a spill at the polluter’s discretion. Does that make sense???

As a regional VP with PA Trout Unlimited Council, I see all the conservation work done in PA. On a local basis our chapter is developing plans for two large watersheds, Spring Creek in Hershey and the Hammer Creek in Eastern Lebanon County. We anticipate that as these plans mature, we will be making grant application for funds such as the Environmental Stewardship Funds.

Increases in flooding caused by large -scale changes in climate and land have already caused millions of dollars in damage to our communities and waterways. By stripping our streams of necessary protection and cutting funding to the agencies and programs we rely onto protect them, we can assuredly expect more damage in the future. I encourage elected officials in Pennsylvania to consider some of our most important natural resources first, and then protect clean water at all costs. Remember the formula, well I want to add clean water to better habitat, leading to more fish and a whole lot more fishing fun!

Thank you very much for this opportunity.