

Trout in a Coal Mine?

John Arway PA Fish and Boat Commission



Mission: To protect, conserve, and enhance the Commonwealth's aquatic resources and provide fishing and boating opportunities



This turn-of-the-century image shows mine mules on their way out of a Barnes and Tucker mine.

PRESENT



PAST



FUTURE

1970 Blowout & Fish Kill



Mahaffey, Pa

ENVIRONMENTAL RISK Prediction, Assessment, & Management

Risk is a measure of the severity and probability of harm.



Major Sources of Water Quality Degradation (16,291 miles)



- Agriculture
 AMD
 Unknown
 Urban Runoff
 Road Runoff
 Residential Runoff
 Habitat Mod.
 Acid Rain
 Veg. Removal
 - □ Other

Source: Draft 2012 DEP 305b Report





DER Hydrogeologist Roger Hornberger (1950 – 2010) Figure 11.1 Conceptual Decision Matrix for Acid

Drainage Potential Used in the early 1980's.

	Low Sulfur	High Sulfur
Low NP	Evaluate Additional Data	Probable Denial
High NP	Probable Issuance	Possible Issuance or Denial

(After Brady and Hornberger, 1990)

In April 1992 Dr. Goddard accepted the Ralph W. Abele Conservation Heritage Award and said "with Ralph's leadership, the Fish Commission was the environmental conscience for the environment in Pennsylvania."



What else is at Risk? Recreational Services









Recreational Trout Fishing

According to a 2001 U.S. Fish and Wildlife Service Report, anglers spend more days (7,263,000 days valued at over \$519M)) fishing for trout in PA than in any other state except California.

Fishing and Boating are BIG Business in Pennsylvania

\$3.2 Billion / year

Panel Session #1: Assessment of the Problem "Scope of the Nonpoint Source Pollution Problem"

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Presented at the Mine Drainage& Watersheds Conference June 1-3, 1995 Clarion University of Pennsylvania Clarion, PA

Estimated Pennsylvania Recreational Fishing Losses Due To AMD

		1 Y		
Projected Use	d Use Miles Polluted		Valuation (\$/trip)	Lost Value (\$/yr)
Trout Stocked Fishery	787	1100	46.83	4.056134E+7
Wild Trout	740	500	46.83	1.731539E+7
Stocked/Wild Trout	106	800	46.83	3952452
Warmwater	la subscript	일 아이는 동생의 가	Luper to se	
Streams	109	126	35.18	484049
Rivers	422	306	35.18	4538558
Stocked Trout/Warmwater	4	447	46.83	<u>83732</u>
Total	2167			6.693552E+7

Recreational Use Loss-Example

Miles	Projected Use	Use Rate Valuation	Lost Value
4.8	TSF	\$67.26	\$355,133
24	TSF	\$67.26	\$775,664
8.8	TSF	\$67.26	\$651,077
	Miles 4.8 24 8.8	MilesProjected Use4.8TSF24TSF8.8TSF	MilesProjected UseUse Rate Valuation4.8TSF\$67.2624TSF\$67.268.8TSF\$67.26

Total Loss per year= \$1,781,874/year for 37.6 miles of TSF.

In Pennsylvania there were over 2500 miles of streams impacted by AMD in 1995 with an estimated Annual Recreational Loss of over \$93 million in 2012 dollars.

Since we now have almost 5600 miles of streams reported as impaired by AMD, it may be time to repeat this assessment to get an accurate accounting of our current losses.

The Right Track

Over the course of my 30 year career with the PFBC, I have seen dramatic changes in the quality of our Commonwealth's streams, rivers and lakes. Although we inherited miles of polluted water from our parents, grandparents and great grandparents, I don't hold those before us accountable for these polluted waters, nor should you. The Industrial Revolution required them to log our forests, mine our coal, drill for our oil and natural gas and harness the power of our rivers for electricity, aggressively farm our fields and work in factories to produce food and energy that our society demanded. The laws that did exist did not protect our rivers and streams, because we needed those goods and services to see us through the Great Depression, two world wars, and several conflicts. That was their legacy, and it was about making America strong for us- the future generation.

Our nation has grown into the most prosperous nation in the world, and we can now afford to purchase our products from other nations. Those nations now cut down their forests, exploit their oil and natural gas reserves, destructively farm their landscapes and export their goods and services to feed and clothe us. We can now afford to protect our environment and work to clean it up.

> **Straight Talk** by John Arway PA Angler and Boater magazine Nov/Dec 2010

The 21st Century ----The Era of Remining, Habitat Restoration and Water Quality Improvement



Restoration of AMLs whether it is remining, habitat restoration, or passive or active mine drainage treatment has resulted in significant improvements to aquatic resources throughout the coalfields of PA.



PFBC's Hereford Manor Lake

Dam Failure results in the loss of:
Stocked Trout Fishery
Warm Water Fishery
Boating Uses
Urban Fishery (High Use)

Exposed Highwalls

2 STATIEF

24

Martin



Remining Potential to Restore the Lake

Refuse Removal and Coal Extraction

Barnes Watkins Refuse Pile





Surface Reclamation and Wetland Creation



Surface Reclamation and Stream Habitat Enhancement

Passive Treatment Technology







Alternative Mine Water Uses

Consumptive use makeup (SRBC)
Hydropower (Antrim)
Marcellus use (Blue Valley treatment plant and Co-op Nursery)

Super Hero



Should we continue our fight for clean water and good habitat or grow a..... STAINLESS Steelhead Trout (Robert B. Hesser, 1982)????