

Pennsylvania's Monongahela River Basin Conductivity Monitoring Network

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Disclaimer & Contact Info

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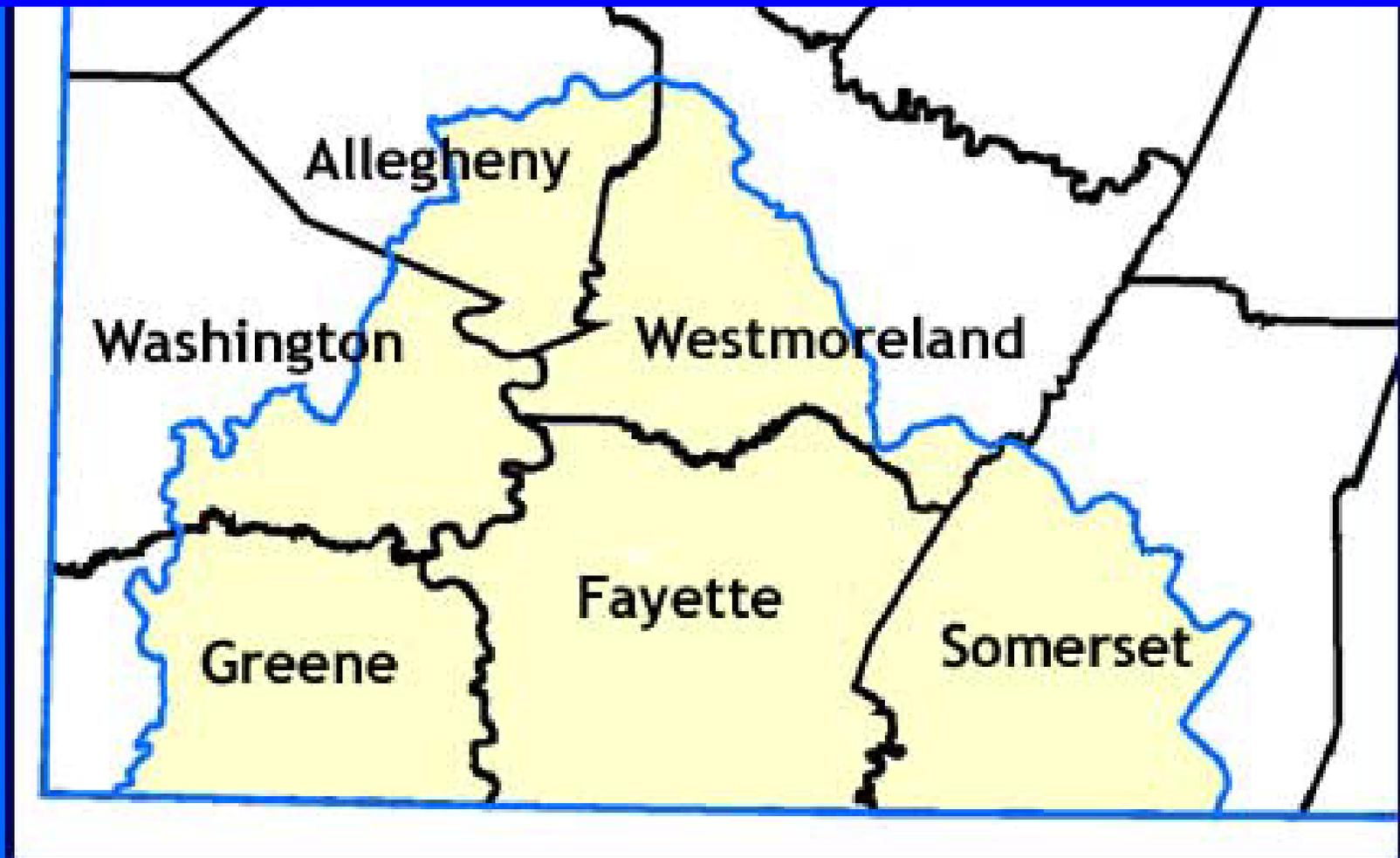
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RAIN info

<http://www.3rain.org/>

> 2737 square miles

> 2000 estimated population of 1,075,000



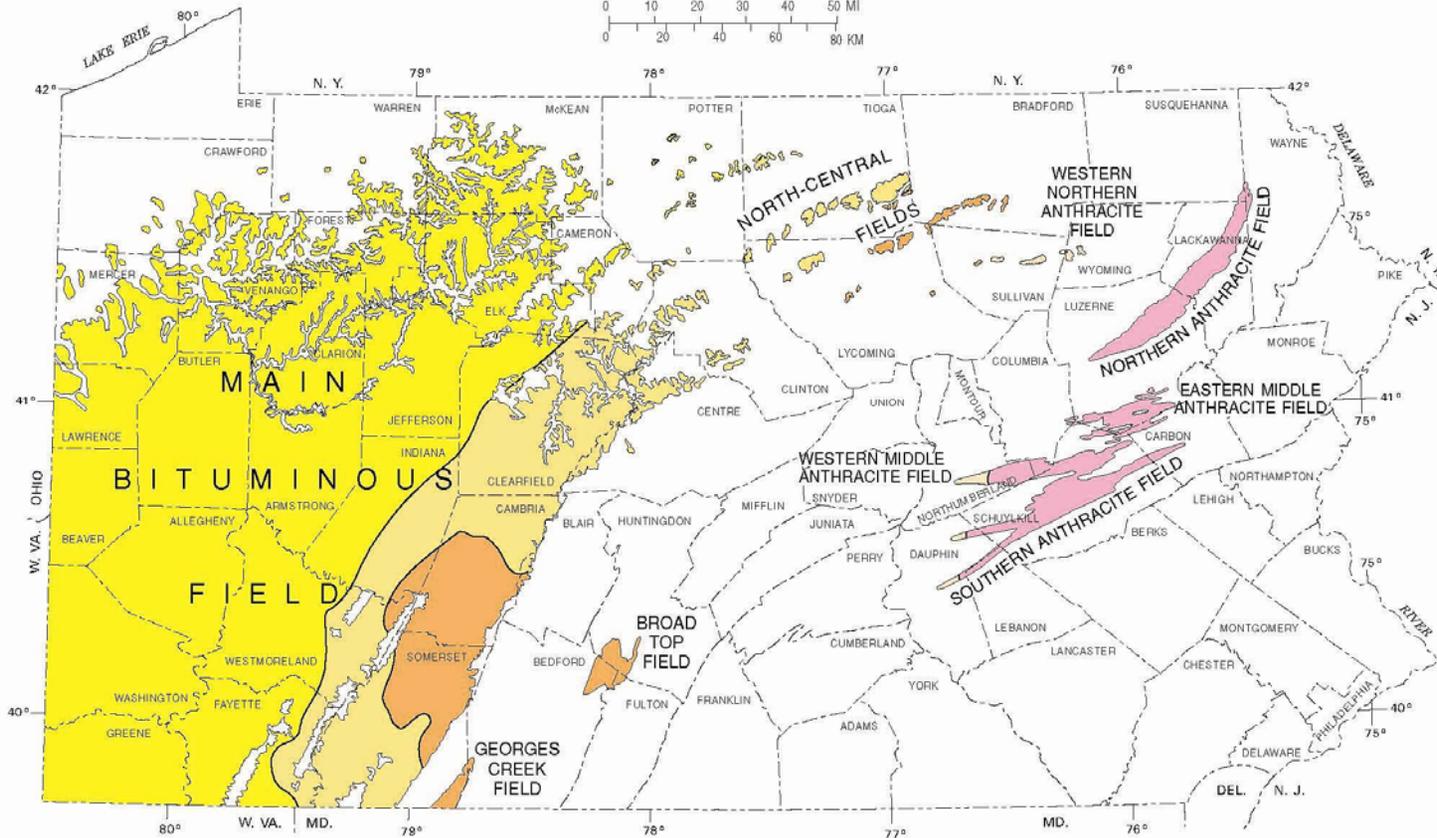
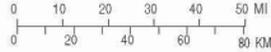
A Long-Term Goal:

**Design and Implementation of
a Monongahela River
Monitoring Network**

DISTRIBUTION OF PENNSYLVANIA COALS

COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF
 CONSERVATION AND NATURAL RESOURCES
 BUREAU OF TOPOGRAPHIC AND GEOLOGIC SURVEY
www.dcnr.state.pa.us/topogeo

SCALE 1:2,000,000



EXPLANATION

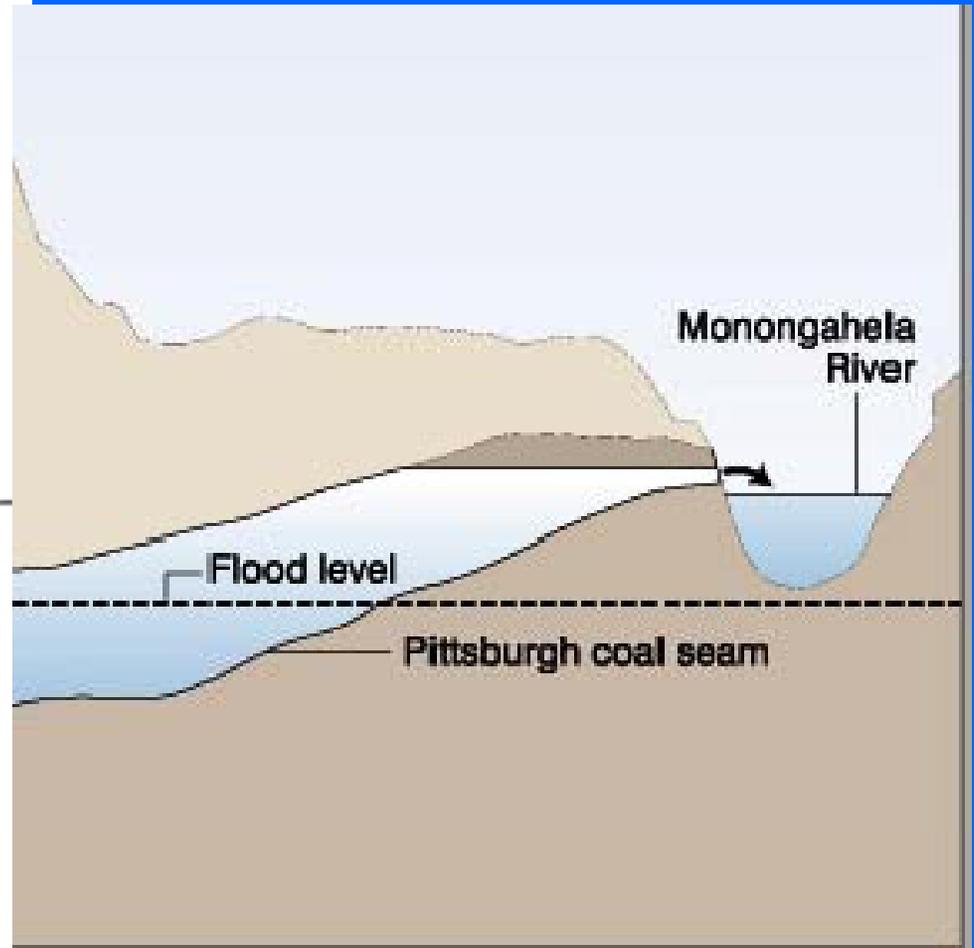
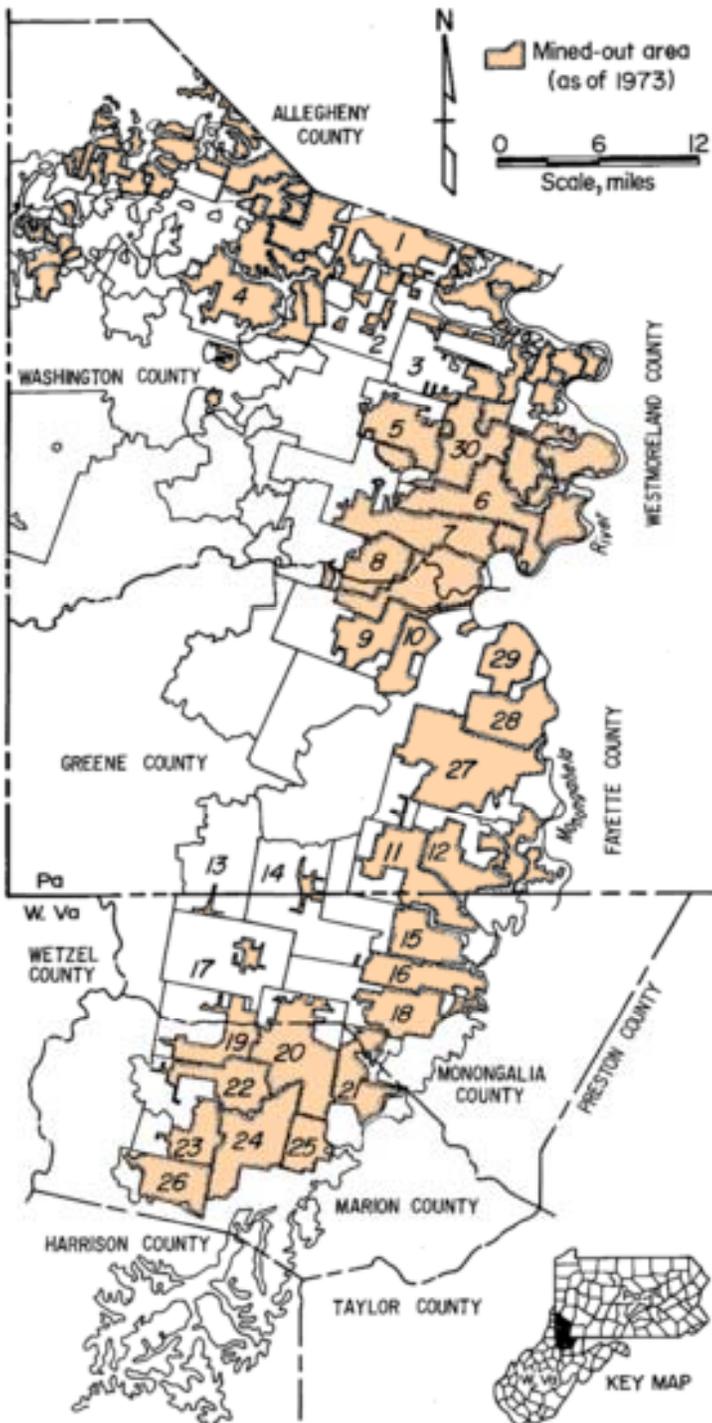
BITUMINOUS FIELDS

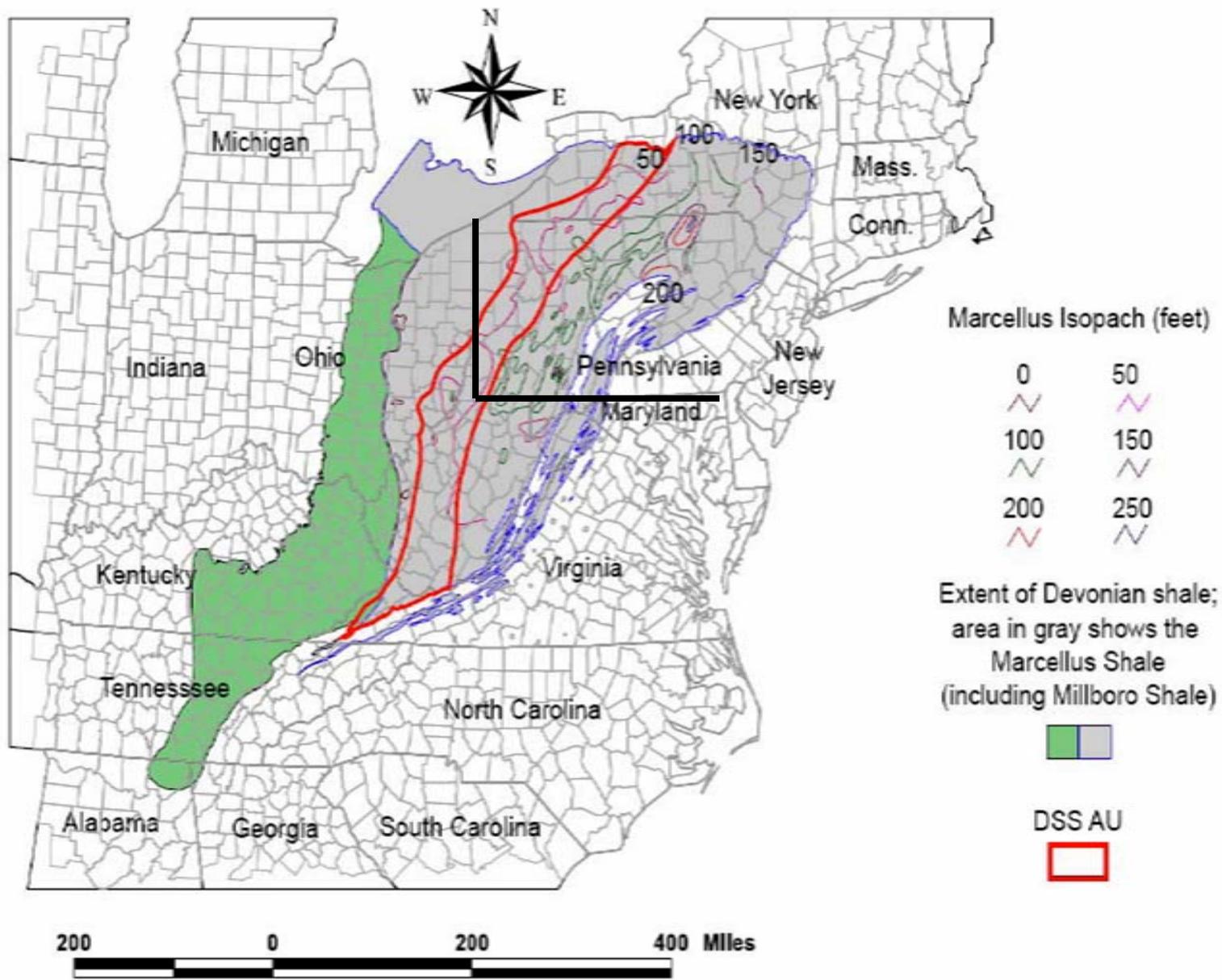


ANTHRACITE FIELDS

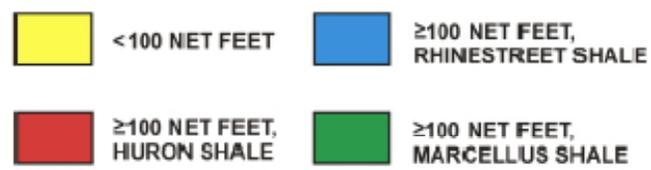
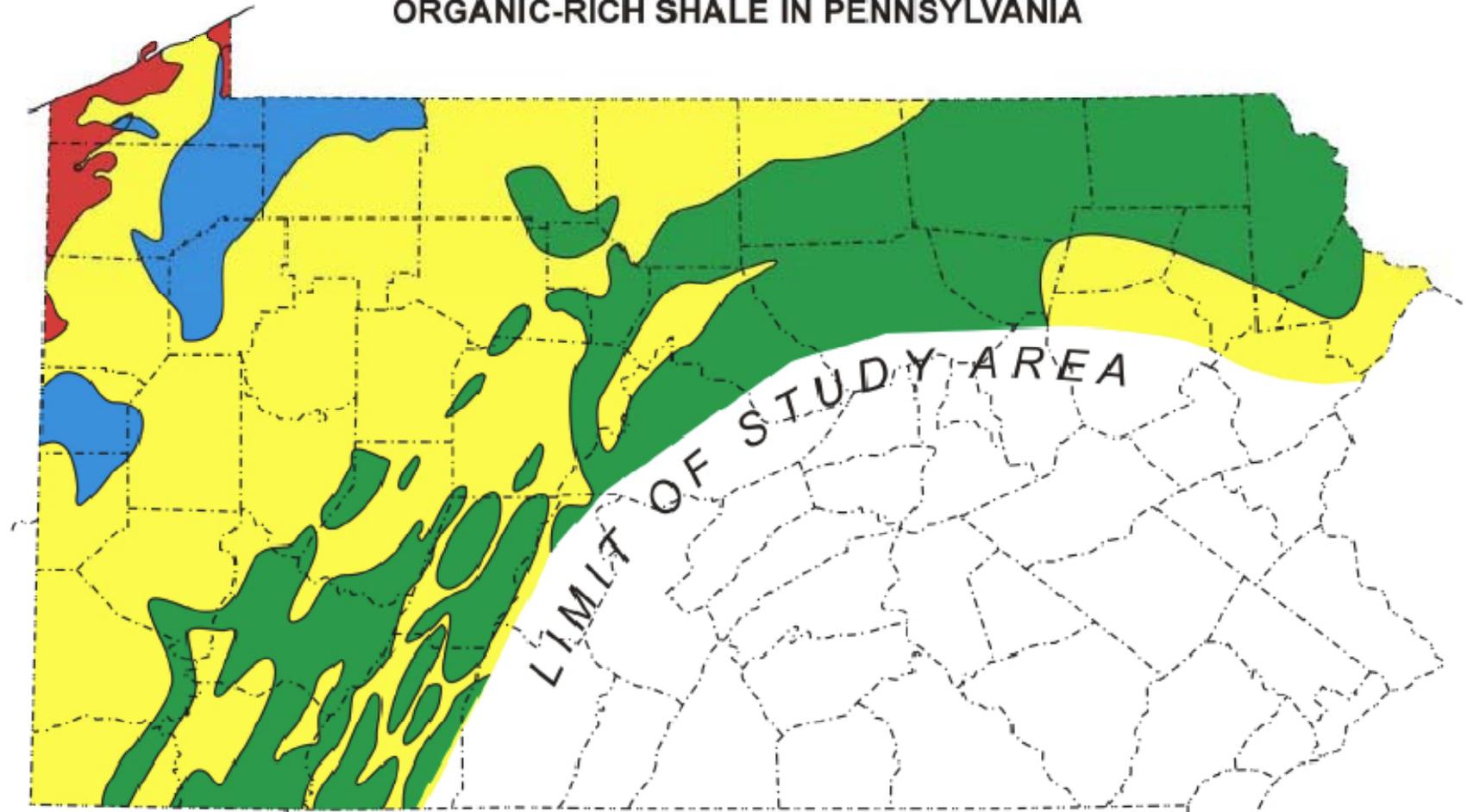


Mine Pool Breakouts





"THREE BELT" DISTRIBUTION OF THICK ORGANIC-RICH SHALE IN PENNSYLVANIA



Based on Plotrowski and Harper, 1979;
and Harper and Abel, 1980

SCALE
0 10 20 30 40 50 MI
0 10 20 30 40 50 60 70 80 Km

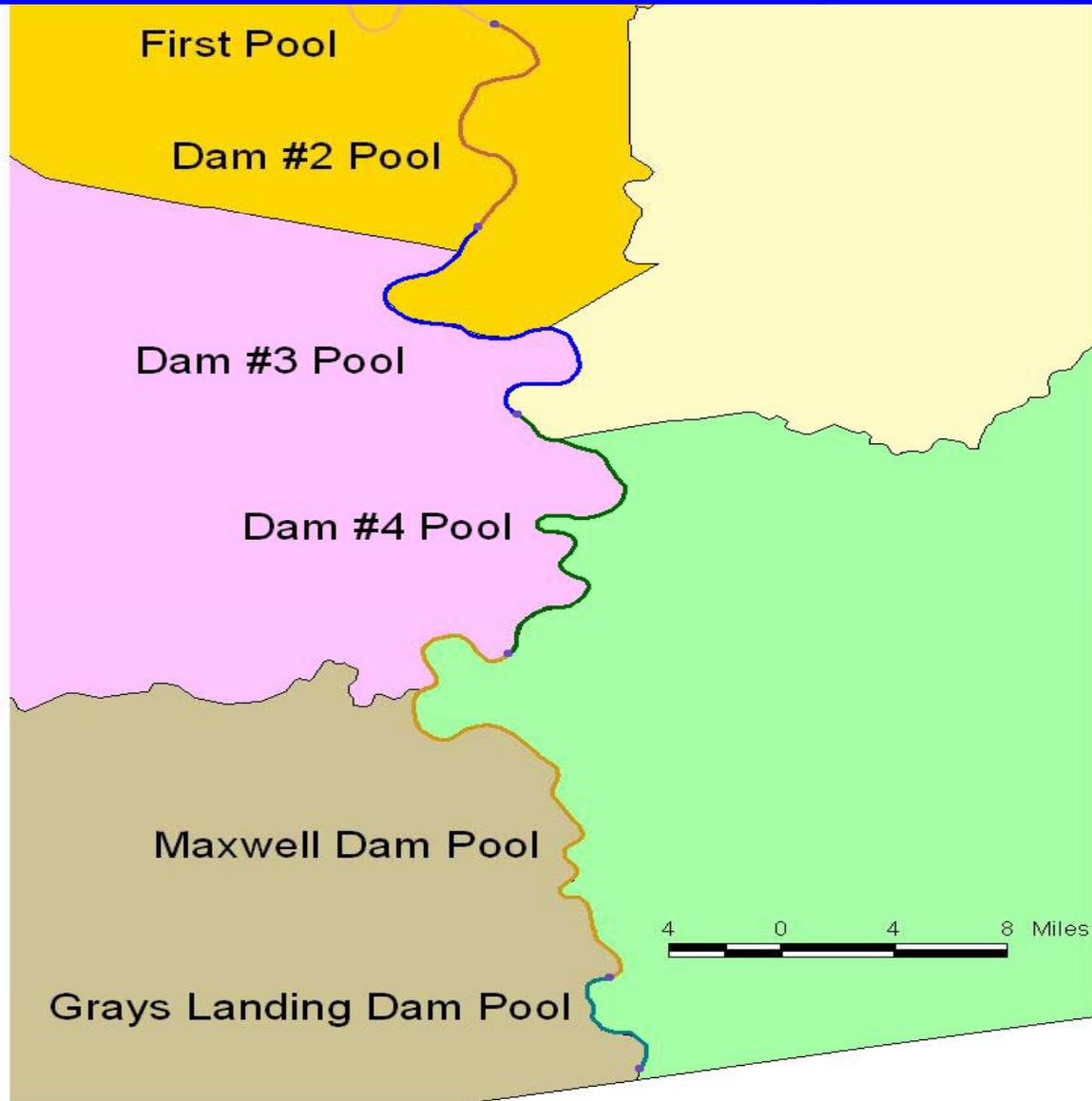
Build the Site



Drill the well



POOLS ON THE MONONGAHELA RIVER OF PENNSYLVANIA



Maxwell Lock and Pool



THE PROBLEM:

- **Fall 2008 – Water Quality Complaint:**
 - **Water users were experiencing scaling, additional treatment, and taste and odor problems.**
 - **In-stream criteria for both TDS and Sulfates were being exceeded**

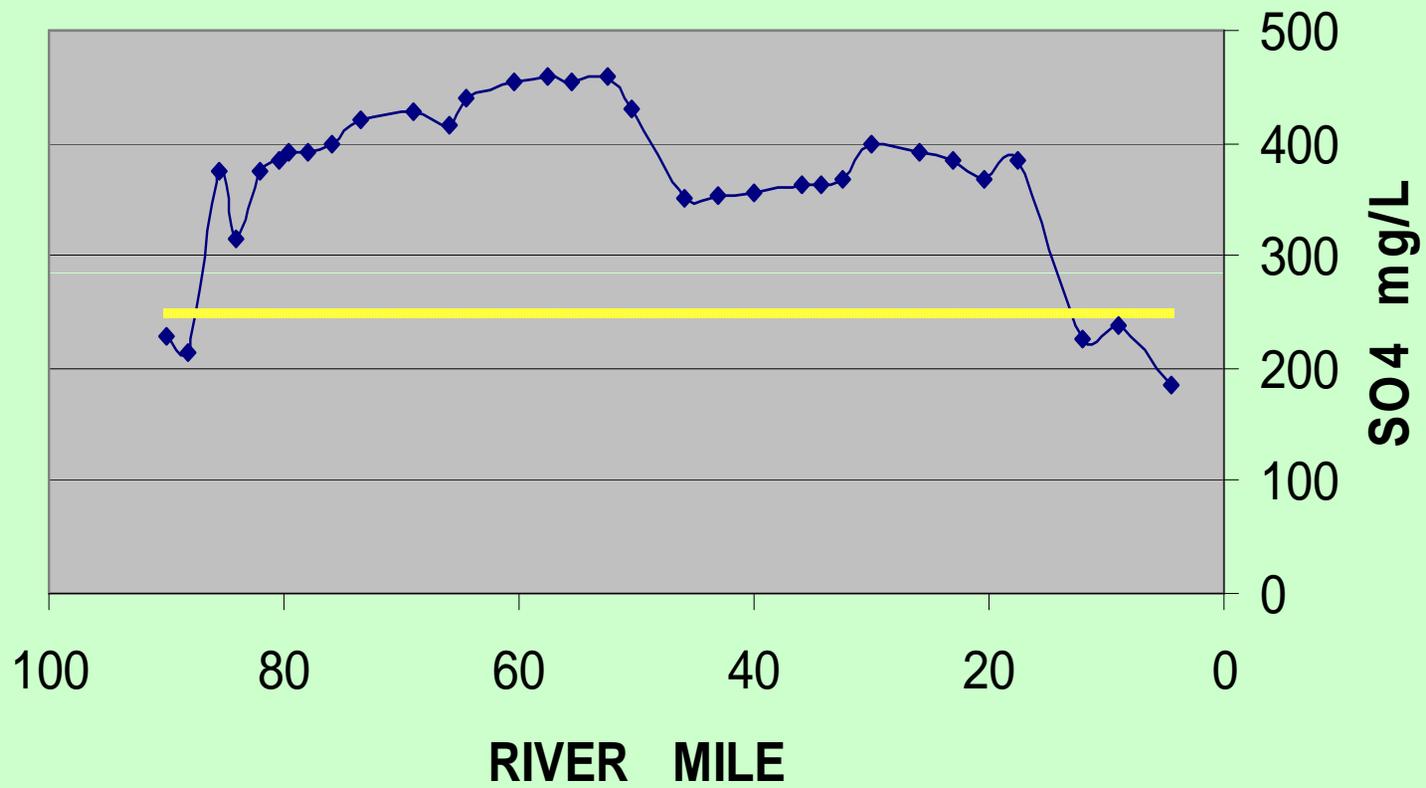
- **PA-DEP launched a water sampling survey throughout the basin**



October 22, 2008 Sampling CONDUCTIVITY & TDS



October 22, 2008 Sampling SO4



Work Group was formed:

Pennsylvania

West Virginia

EPA Region III

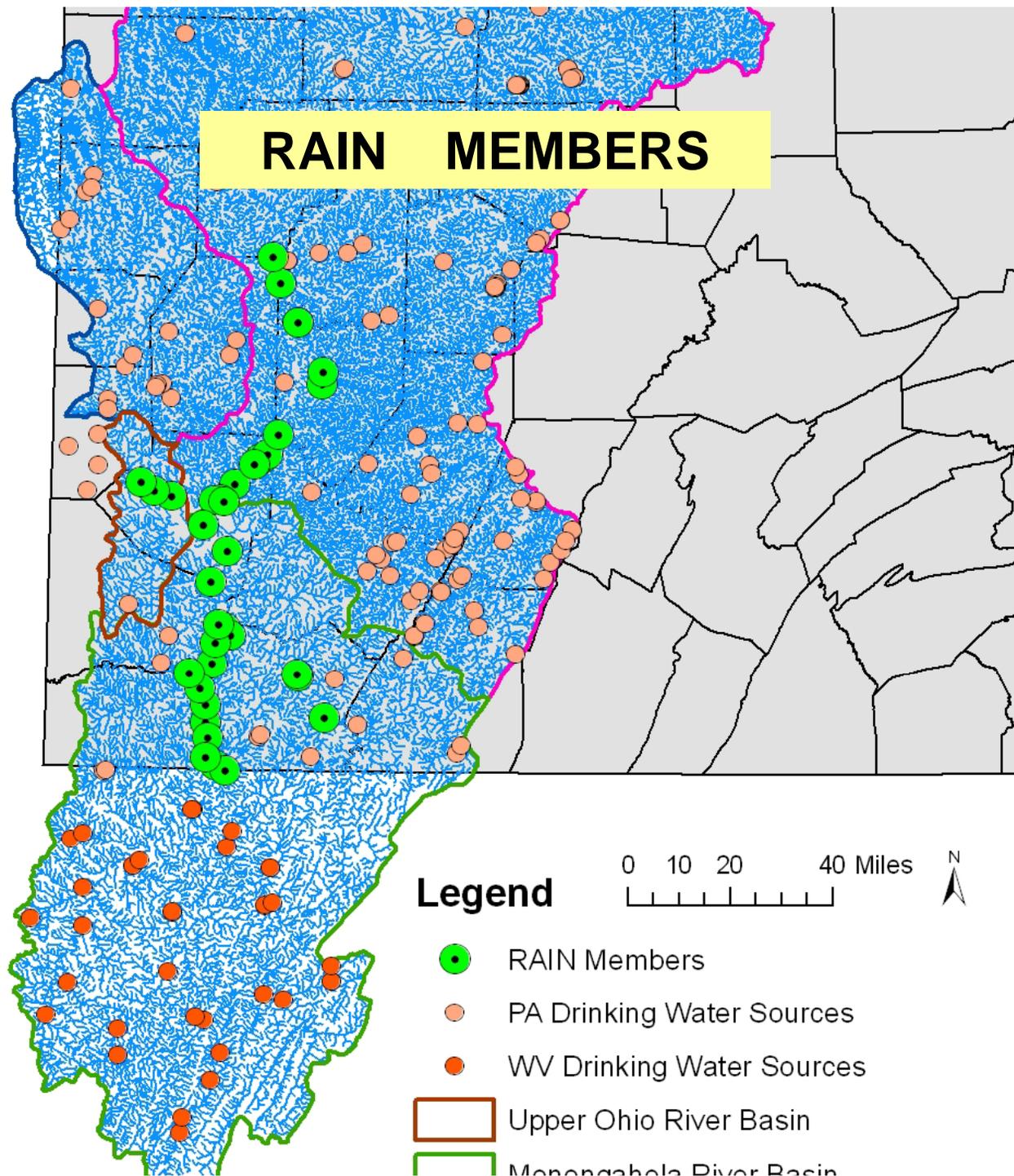
Army Corps of Engineers – Pittsburgh

RAIN (River Alert Information Network)

What is RAIN?

- **A collaboration of Allegheny, Monongahela and Youghiogheny River Water Authorities; PA DEP; Riverside Center for Innovation; Carnegie-Mellon University; and California University of PA**

RAIN MEMBERS



Initiatives

- Spill Notification
- Water Quality Assessment
- Web based Communications and Data Sharing System
- Instrument Identification, Purchase, Installation and Maintenance
- Operator Training
- Ongoing Support and Maintenance

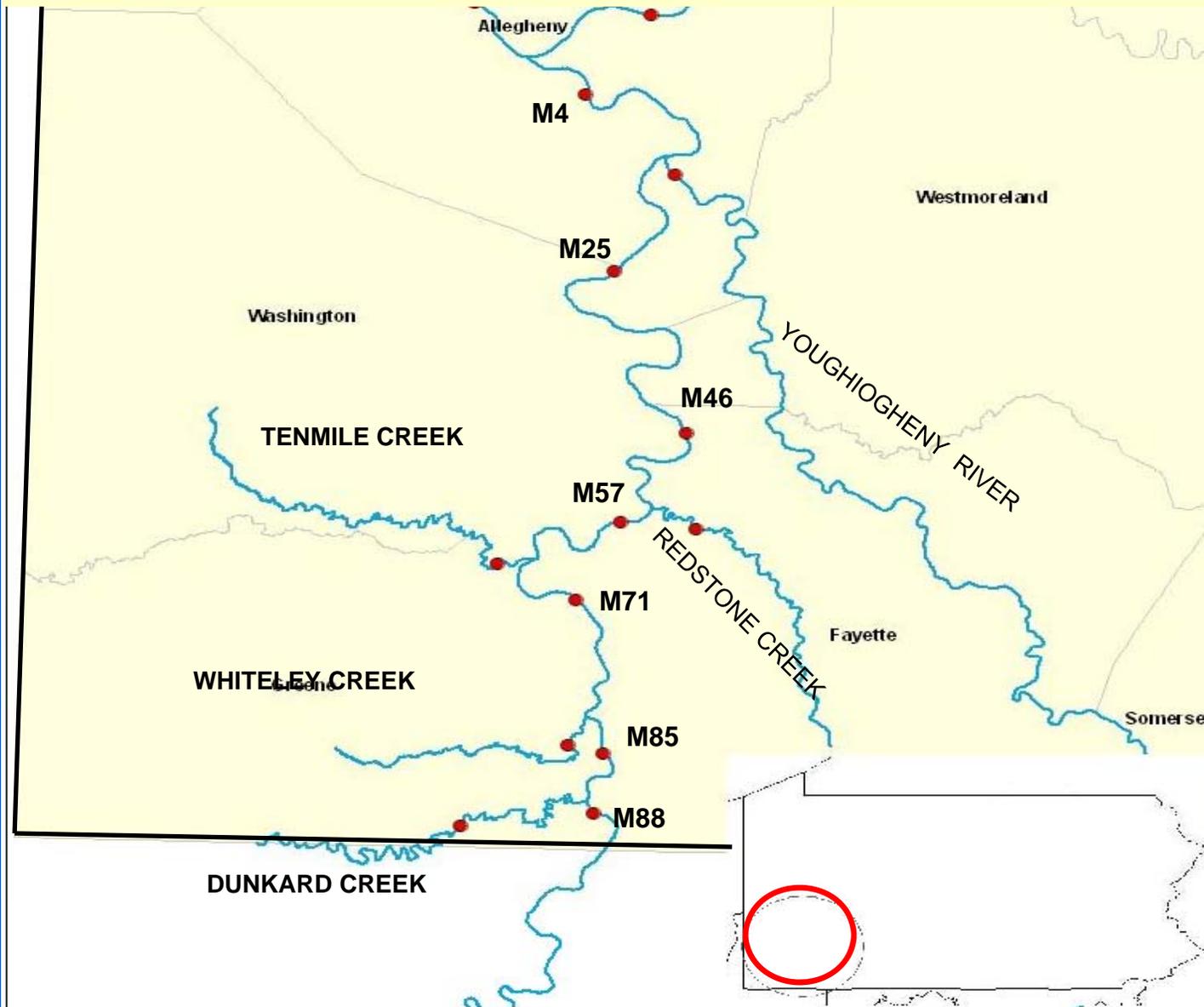
Benefits of RAIN

- Early Warning Detection System will improve monitoring of sudden changes in source water quality.
- Improved information on each spill/release will enable utilities to make better response decisions.
- Lessen public health risks on population served.
- Deterrent to negligent dischargers

Benefits of RAIN

- Improved public confidence in water quality and utility operations
- Better information for press inquiries and informing the public during spill events
- Improved communication between water suppliers
- Improved operation of treatment plants
- Improved notification of spill events to water authorities

RAIN Sensor Locations



0 3 6 12 18 24 Miles



RAIN's Monongahela TDS Project Monitoring Effort

Ten RAIN Member Facilities:



HACH SC1000

Conductivity

pH

Temperature

RAIN's Monongahela TDS Project Monitoring Effort

Four Remote Tributary Sites:

Hydrolab MS5 Sonde

Conductivity

pH

Temperature



Original Goal:

- **23 Units - most on the Monongahela River main-stem in Pennsylvania and West Virginia**
- **Specific Conductance, Temperature, and pH**
- **Hourly Intervals**
- **Instantaneous Reporting to a Centralized Web Server.**

Work in Progress:

- **Some RAIN Stations are not yet operational**
- **Web site reporting last 4 hours**
- **Archive Data not readily available**
- **Meter Maintenance - Hach v. Datasonde**
- **Lock and Dam mixing hydraulics and travel time**
- **Data Quality Assurance – “in progress”**

RAIN WEBSITE ADDRESS:



<http://www.3rain.org/>

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