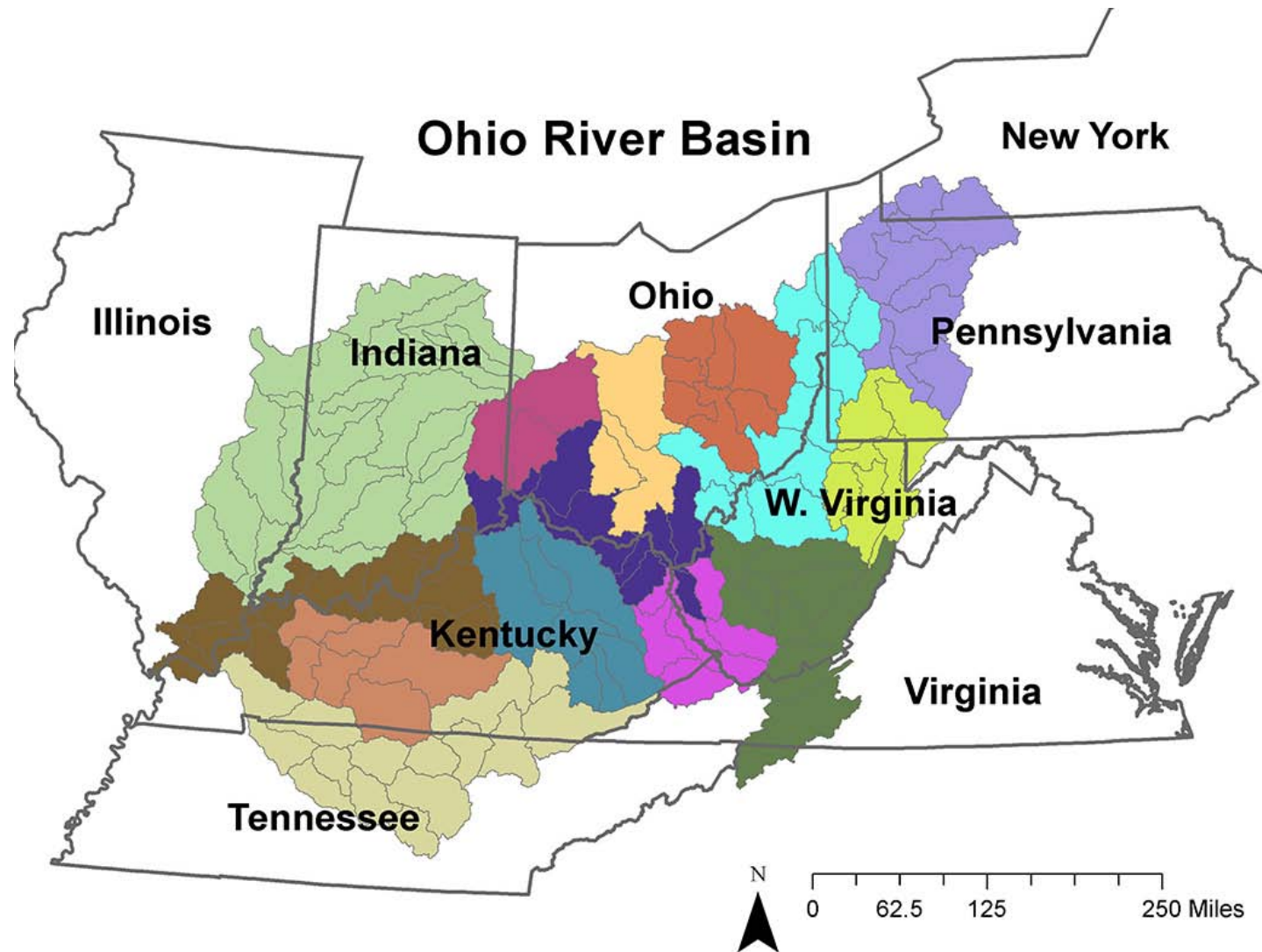




Ohio River Basin Water Quality Trading Project

Larry M. Antosch, Ph.D.
Ohio Farm Bureau Federation
Senior Director, Policy Development and
Environmental Policy

Ohio River Basin



What is WQT Trading?

Farm installs
best management practice
to generate credit



Permitted source
buys credit to meet
regulatory requirement



Nutrient Reduction at Lower Cost

Selling Water Quality Credits

- **Funding source offset the cost of new conservation practices aimed at improving water quality**
- **Participation is voluntary**
- **Must maintain the land management activities that generated the credits**

WQT in Context...

Clean Water Act

- Water Quality Standards
- Monitoring
- Assessment
 - 301
 - 303(d)
 - TMDLs
- NPDES Permits
 - CAFOs
 - Wastewater
 - **WQT**
 - Stormwater
- COE wetland banking
- Section 319 & 208

USDA Farm Bill

- NRCS
- FSA
- Fish & Wildlife
- Forest Service
- EQIP
 - CIG
- WRP
- CRP
- CREP
- Swamp Buster
- Technical assistance

Non-governmental

- State and County rules:
 - Landuse
 - Districts
 - Cost share
 - Septic systems
 - Erosion ordinances
 - Drainage authorities
- NGOs
 - Implementation
 - Land retirement
 - Education
 - Challenges

Project Due Diligence

Phase I: Due Diligence (EPRI Funded)

- 2007 – Scoping of Pilot Project
Concept (EPRI gave \$1 million)
- 2008 – Feasibility Study and Business
Case for Power Company
Participation

**50% of dollars are federal
grants (EPA & USDA)**

Phase II: Implementation

- 2009 – Received \$2M in Funding
(EPA, USDA, private)
- 2010 – Outreach, planning, interstate
collaborations. EPRI Raise
\$1M of private funds
- 2012 – Scoping pilot trades
- 2013 – Execute pilot trades (subject to
funding)

50% are Private Funds

WQT Project Objectives & Approach

Overall Objective:

Demonstrate how WQT can be used for cost-effective permit compliance, provide ecological co-benefits and support farmers.

Approach:

Test case: Reduce overall loading of nutrients within the Ohio River Basin using water quality trading.

Pilot Study Objectives

- Collaboration
- Strong Science
- Defensible Rules
- Ancillary Benefits (ex., Ecosystem Services, Social)

ORB WQT Collaborators Engagement

Organizations:

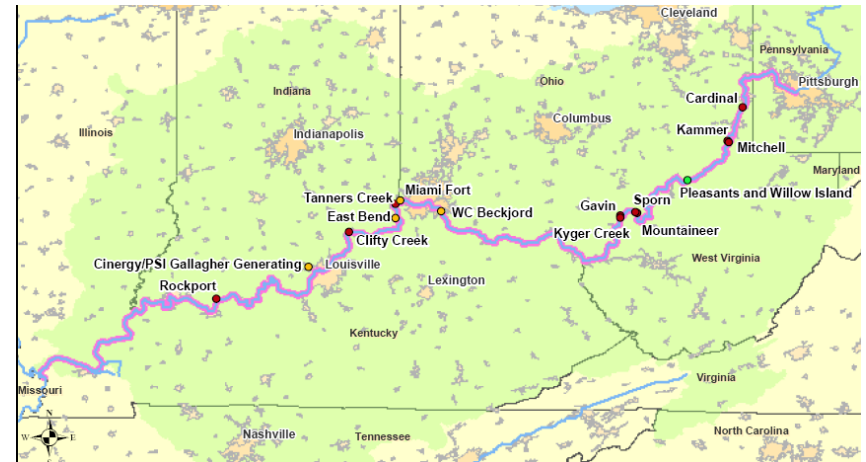
Electric Power Research Institute
American Farmland Trust
Ohio Farm Bureau Federation
ORSANCO
Tennessee Valley Authority
American Electric Power
Hoosier Energy
Duke Energy
Hunton & Williams
Kieser & Associates
UC Santa Barbara

States:

Ohio
Indiana
Kentucky

Agencies

US EPA
USDA



Steering Committees

- **Agriculture**
 - **Indiana**
 - **Ohio**
 - **West Virginia**
 - **Kentucky**
 - **Illinois**
- **Wastewater Treatment Plants**
- **Power Plants**
- **Environmental Groups**
- **Federal and State Agencies**

Agriculture – Outreach & Engagement

- **American Farmland Trust**
 - direct involvement of farmers during the development of the Ohio River Basin Trading Project
- **Listening Sessions**
 - opinions, concerns, and suggestions
- **Agriculture Steering Committee**
- **Site Visits**

Indiana Farmer Field Trip – August 8th

- Toured 2 farms in south-eastern Indiana
- Heard farmer & buyer perspectives
- Walked through mock credit estimates
 - Nutrient Tracking Tool
 - Region 5 Spreadsheet
 - WARMF



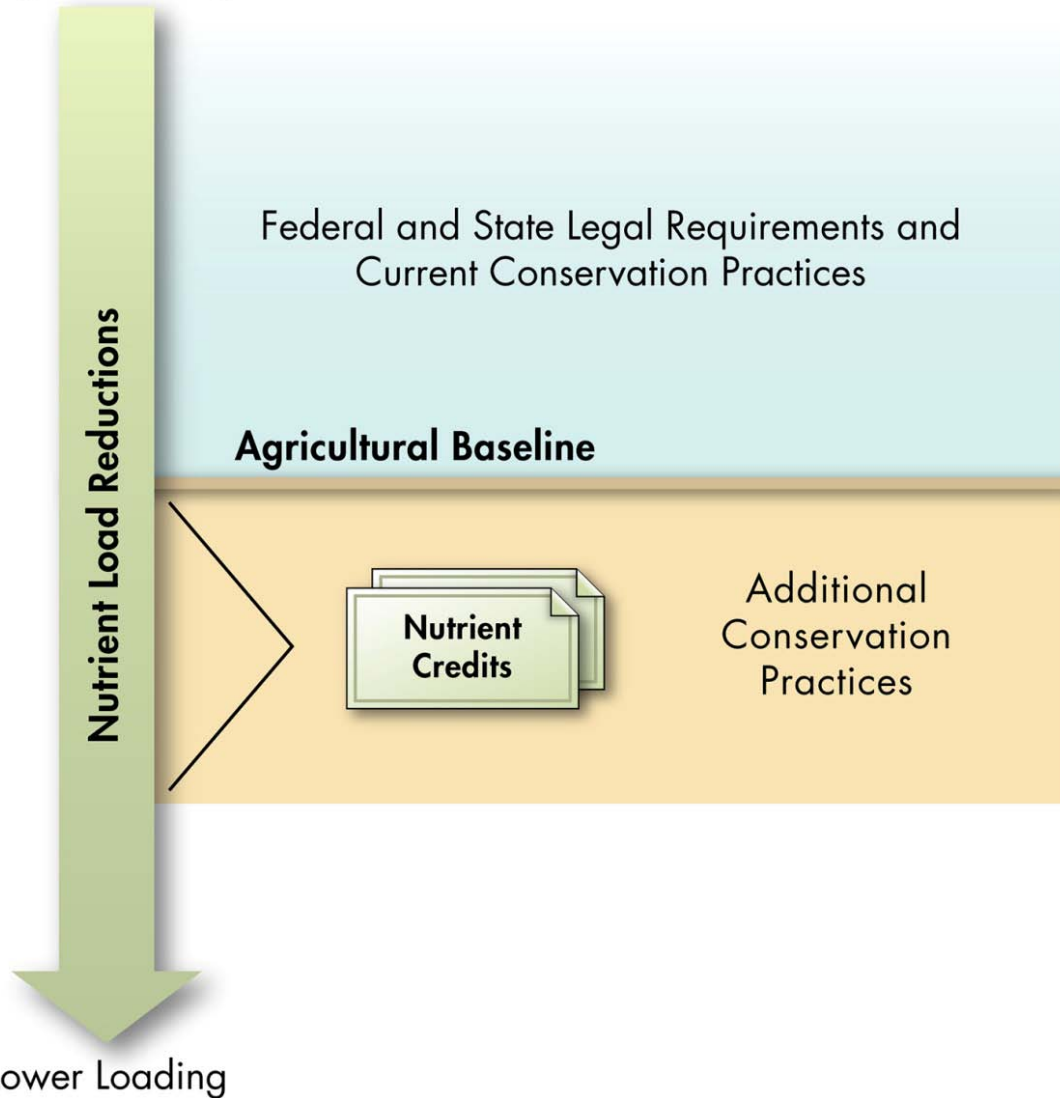
Opportunities for BMPs

- BMP Examples:
 - Cattle Exclusion Fencing
 - Nutrient Management
 - Cover Crops
 - Buffer Strips
 - Grass Waterways
 - Heavy Use Pads
 - Manure Pits
- Ecosystem Services:
 - Carbon Sequestration,
 - Native Plants
 - Habitat



Baselines

Higher Loading




Lower Loading

Crediting Equation: Attenuation Factors

$$\text{Credit} = (F_{\text{field}} \times F_{\text{river}} \times F_{\text{instream}} \times F_{\text{equivalence}} \times F_{\text{safety}}) \text{ Load Reduction}$$



Watershed Model



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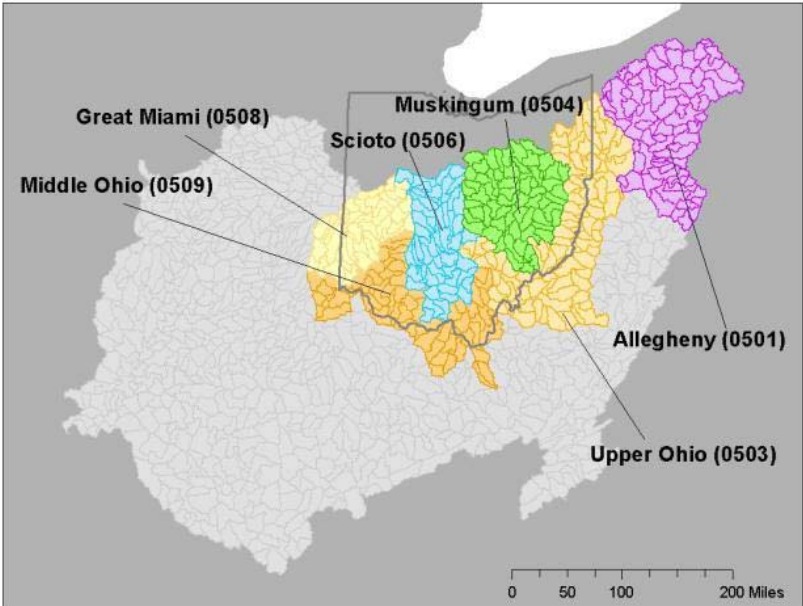
Ecosystems Research Division

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You are here: [EPA Home](#) » [athens](#) » [wwqtsc](#) » [html](#) » Watershed Analysis Risk Management Framework (WARMF)

Watershed Analysis Risk Management Framework (WARMF)

To facilitate TMDL analysis and watershed planning, WARMF was developed under sponsorship from the Electric Power Research Institute (EPRI) as a decision support system provides a road map to calculate TMDLs for most (e.g., nutrients). It also provides a road map to guide implementation plan. The scientific basis of the model is based on several peer reviews by independent experts and is suitable with the data extraction and watershed planning organized into five (5) linked modules under one, making it a very user friendly tool suitable for expert users.



WWQTCS Info

- [WWQTCS Home](#)
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- [Tools](#)
 - [Watershed Models](#)
 - [Basins](#)
 - [LSPC](#)
 - [WAMView](#)
 - [SWMM](#)
 - [WARMF](#)
 - [Water Quality Models](#)
 - [WASP](#)
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 - [Aquatox](#)
 - [EPD-RIV1](#)
 - [Hydrodynamic Models](#)
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 - [EPD-RIV1](#)

Credit Trading Registry

Store

Registry

BOAT

Dividends

Source

CDS & Bonds

RED

Loan Pricing

Indices

3

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Home All Units Projects/Issuances RFI Bids/Offers User Admin Activity Log

Find Units By

More Options... Show All Units

Project

Account

Search...

Name

American Farmland Trust

American Farmland Trust Sub-Account

Standard

Project Type

Unit Measurement

Unit Class

Unit State

Transfer

List

Refre

Discard

Export to Excel

Export to PDF

New

Search by serial no..

Project	Account	Vintage	Origin	Holdings	Measurement	Status
Angel Mounds	American Farmland Trust	2012 - 2013	United States	10 lbs/year	RFI Listed	
Ohio River Basin Interstate Trading Program - Nitrogen reduction/removal ORB-BAW-US-100000000001275-01102012-30092013-2051-2060-MER-0-P						
Angel Mounds	American Farmland Trust	2012 - 2013	United States	250 lbs/year	RFI Listed	
Ohio River Basin Interstate Trading Program - Nitrogen reduction/removal ORB-BAW-US-100000000001275-01102012-30092013-2061-2310-MER-0-P						
Angel Mounds	American Farmland Trust	2012	United States	34 lbs/year	Active	
Ohio River Basin Interstate Trading Program - Nitrogen reduction/removal ORB-BAW-US-100000000001275-01012012-31122012-4101-4134-MER-0-P						
Angel Mounds	American Farmland Trust Sub-Account	2012 - 2013	United States	95 lbs/year	Active	
Ohio River Basin Interstate Trading Program - Nitrogen reduction/removal ORB-BAW-US-100000000001275-01102012-30092013-2556-2650-MER-0-P						
Lexington Plain	American Farmland Trust	2012 - 2013	United States	800 lbs/year	Active	
Ohio River Basin Interstate Trading Program - Nitrogen reduction/removal ORB-BAW-US-100000000001276-01102012-30092013-3301-4100-MER-0-P						
Lexington Plain	American Farmland Trust	2012 - 2013	United States	199 lbs/year	Active	
Ohio River Basin Interstate Trading Program - Phosphorus reduction/removal ORB-BAW-US-100000000001276-01102012-30092013-3052-3250-MER-0-P						
Lexington Plain	American Farmland Trust	2012 - 2013	United States	1 lbs/year	RFI Listed	
Ohio River Basin Interstate Trading Program - Phosphorus reduction/removal ORB-BAW-US-100000000001276-01102012-30092013-2951-2951-MER-0-P						
Lexington Plain	American Farmland Trust	2012 - 2013	United States	100 lbs/year	Retired	
Ohio River Basin Interstate Trading Program - Phosphorus reduction/removal ORB-BAW-US-100000000001276-01102012-30092013-2952-3051-MER-0-P						
Lexington Plain	American Farmland Trust	2012 - 2013	United States	50 lbs/year	Active	
Ohio River Basin Interstate Trading Program - Nitrogen reduction/removal ORB-BAW-US-100000000001276-01102012-30092013-3251-3300-MER-0-P						

Page 1 of 1

Less Details

Displaying 1 - 9 of 9



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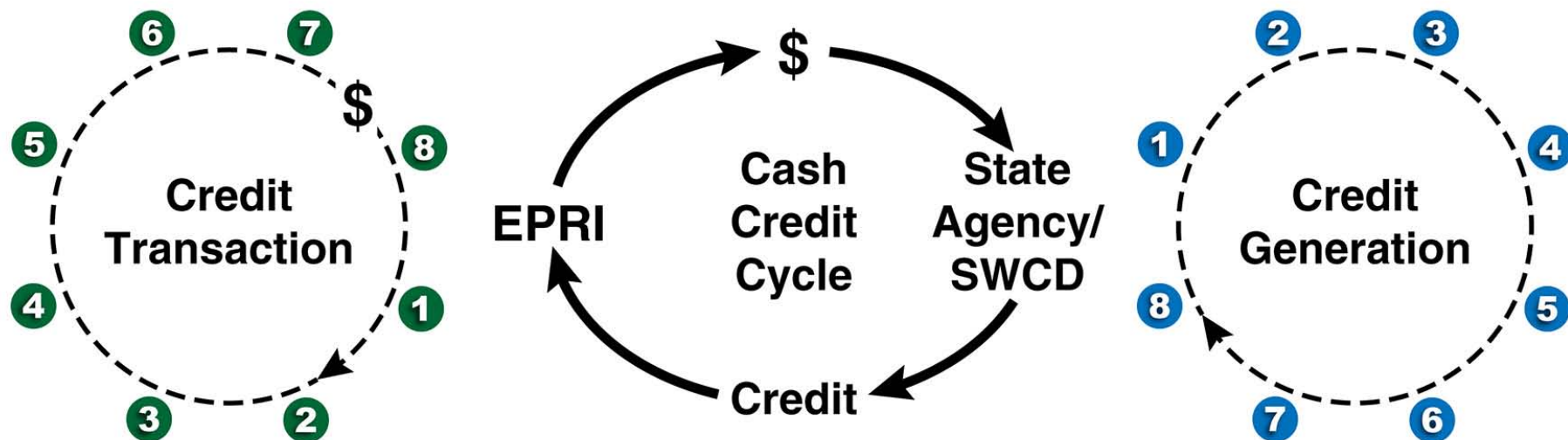
markit

EPRi ELECTRIC POWER RESEARCH INSTITUTE

Credit Stacking

Not Stacked (Spatially Distinct)		Stacked (Spatially Overlapped)
1 acre forest earning carbon credits	1 acre forest earning endangered species habitat credits	1 acre forest earning both carbon credits and endangered species habitat credits
 <p><i>One property</i></p>		 <p><i>One property</i></p>
Total Credits = 2 Total Acres = 2		Total Credits = 2 Total Acres = 1

Pilot Credit Process



Credit Generation



Credit Transaction



The Trading Plan is Signed!

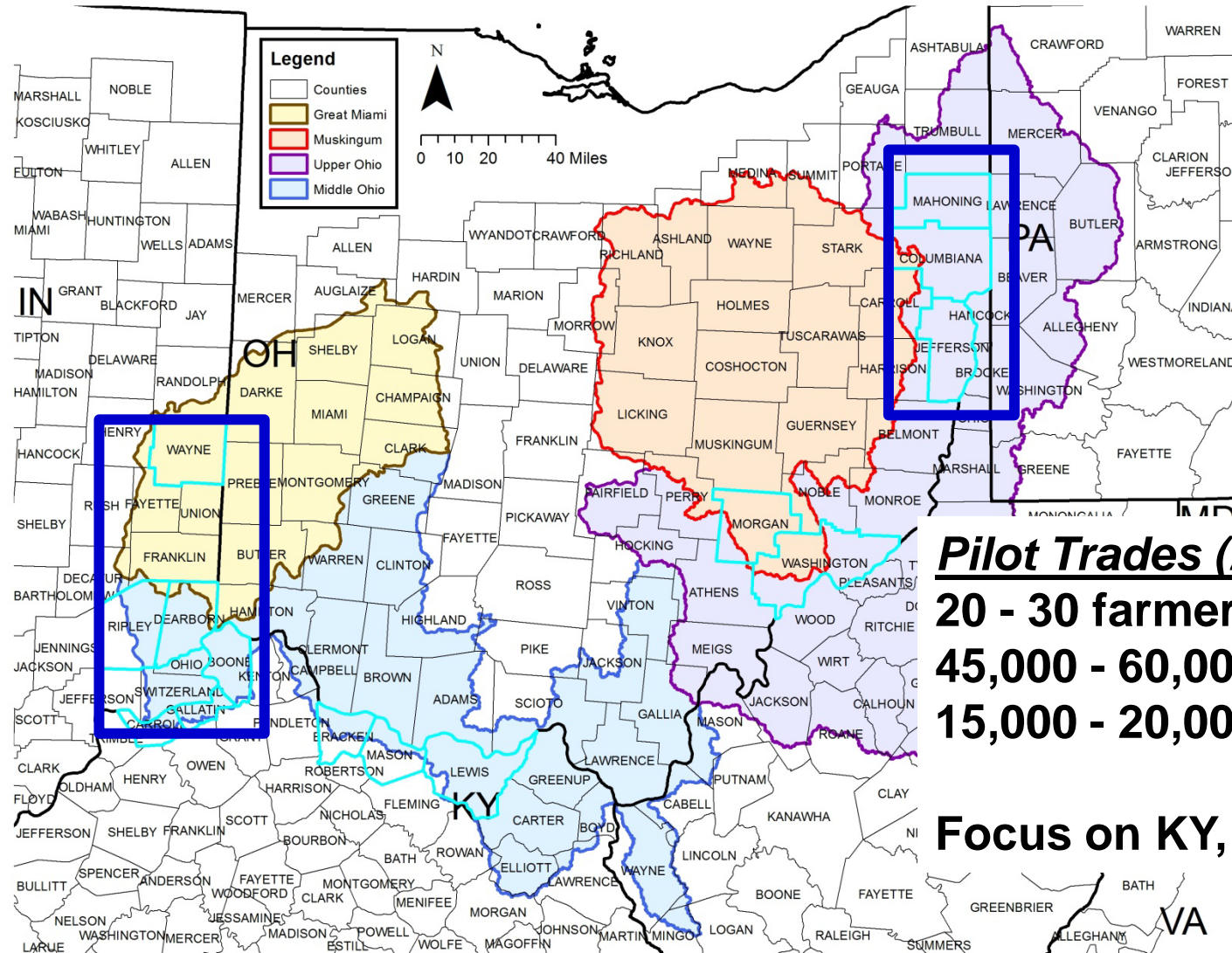
August 9, 2012 in Cincinnati Ohio



**The
Economist**

June 22: A [nutrient pollution article](#) in The Economist mentions EPRI's Water Quality Trading Program.

A photograph of a large, two-story red barn with a white roof. In the foreground, there is a white fence and a pile of yellow straw. The barn has a small white door and a small white fence in front of it. The sky is blue and there are some trees in the background.

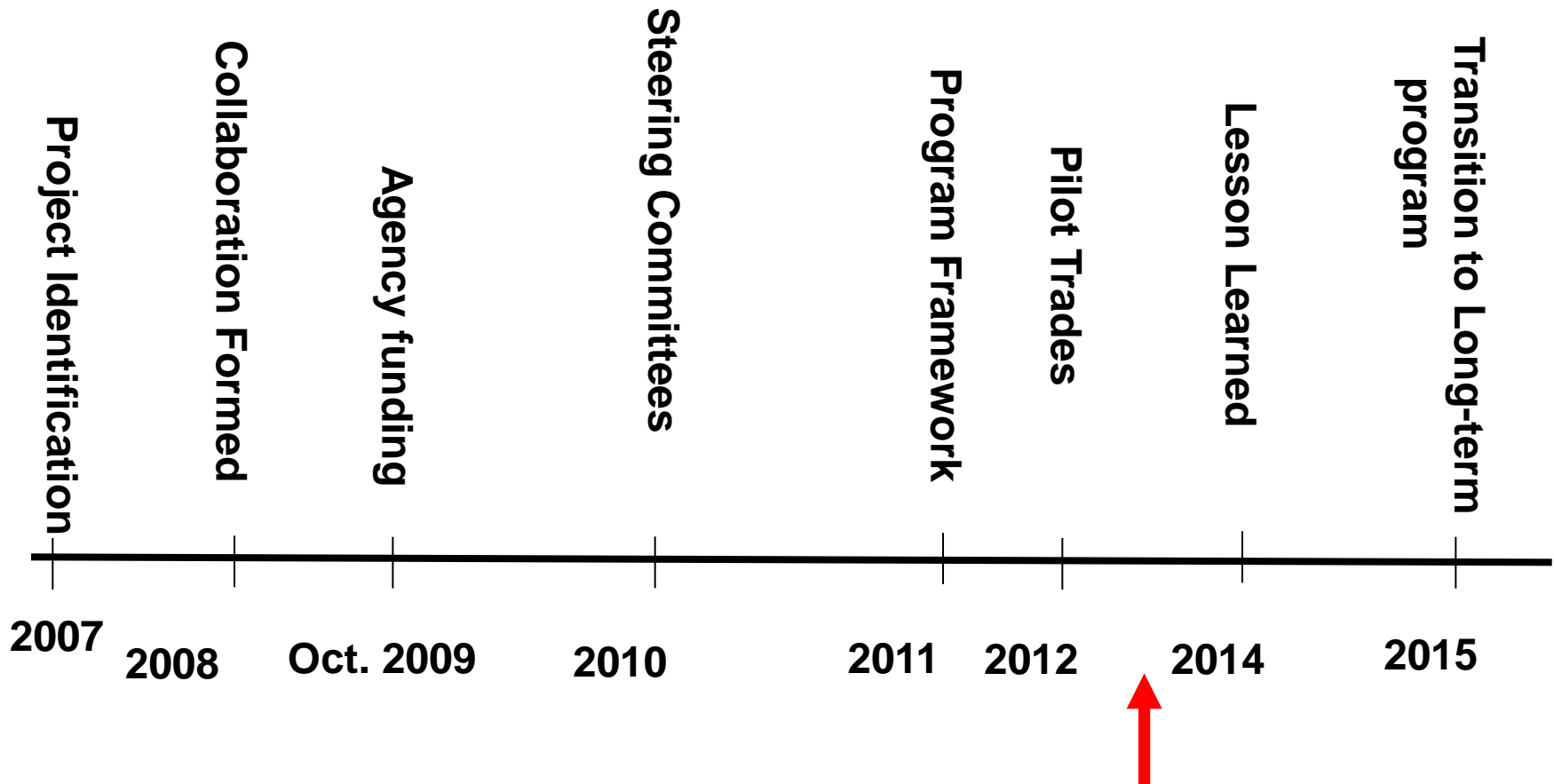


15,000 - 20,000 lb P/yr

Focus on KY, IN, OH

Project Schedule

- Signed Trading Plan – August 2012
- BMPs: Begin in Spring 2013



Contacts & Questions

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Jfox@epri.com

650-855-2138

www.epri.com/ohiorivertrading

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Supplemental Project Notice


- [Read the Full Notice](#)  (PDF 169KB)



Relevant EPRI Reports

- [Program on Technology Innovation: Modeling Nutrient Trading in the Ohio River Basin](#) (PDF 10.6MB)

Ohio River Basin Trading Pilot Project

Water quality trading is an innovative market-based approach to achieving water quality standards through programs that allow emitters to purchase pollution reductions from another source. Control costs for any one pollutant can differ from one emitter to another, and water quality trading provides an option for meeting pollution permit targets in a cost-effective manner. Properly designed and deployed, the proposed trading program in the Ohio River Basin will produce water quality credits for nitrogen and phosphorus, protecting watersheds at lower overall costs. The program may also benefit receiving water bodies as far away as the Gulf of Mexico now threatened by nitrogen and phosphorus pollution. This will be a first-of-its-kind regional trading project and represents a comprehensive approach to designing and developing markets for nitrogen and phosphorus. [Read the Program Summary](#)  (PDF 387KB)

