Ohio River Basin
Water Quality Trading Project

ACES 2012
December 12, 2012
The Trading Plan is Signed!

August 9th, 2012 in Cincinnati Ohio

June 22: A nutrient pollution article in The Economist mentions EPRI's Water Quality Trading Program.
# WQT in Context…

<table>
<thead>
<tr>
<th>Clean Water Act</th>
<th>USDA Farm Bill</th>
<th>Non-governmental</th>
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</thead>
<tbody>
<tr>
<td>- Water Quality Standards</td>
<td>- NRCS</td>
<td>- State and County rules:</td>
</tr>
<tr>
<td>- Monitoring</td>
<td>- FSA</td>
<td>• Landuse</td>
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<tr>
<td>- Assessment</td>
<td>- Fish &amp; Wildlife</td>
<td>• Districts</td>
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<tr>
<td>- 301</td>
<td>- Forest Service</td>
<td>• Cost share</td>
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<tr>
<td>- 303(d)</td>
<td>- EQIP</td>
<td>• Septic systems</td>
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<tr>
<td>- TMDLs</td>
<td>- CIG</td>
<td>• Erosion ordinances</td>
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<tr>
<td>- NPDES Permits</td>
<td>- WRP</td>
<td>• Drainage authorities</td>
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<tr>
<td>- CAFOs</td>
<td>- CRP</td>
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<tr>
<td>- Wastewater</td>
<td>- CREP</td>
<td></td>
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<tr>
<td>- WQT</td>
<td>- Swamp Buster</td>
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<tr>
<td>- Stormwater</td>
<td>- Technical assistance</td>
<td>- NGOs</td>
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<td>- COE wetland banking</td>
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<td>• Implementation</td>
</tr>
<tr>
<td>- Section 319 &amp; 208</td>
<td></td>
<td>• Land retirement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Challenges</td>
</tr>
</tbody>
</table>
Nutrient Criteria are Coming

- Currently, point sources are in compliance with NPDES permit limits for TN and TP.
- Anticipate more stringent nutrient criteria for P and N.
- Want to test trading program ahead of regulatory need.

The EPA and many states concerned over nutrient impaired water bodies such as the Gulf of Mexico
ORB WQT Stakeholder 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
Markit Environmental

States:
Ohio
Indiana
Kentucky

Agencies:
USEPA
USDA

Steering Committees:
WWTP
Agriculture
Power Plants
Environmental Groups
ORB WQT Project Objectives & Approach

Overall Objective:
Demonstrate how WQT can be used for cost-effective permit compliance and provide ecological co-benefits.

Pilot Study Objectives
– Collaboration
– Strong Science
– Defensible Rules
– Address Key WQT Issues
– Ancillary Benefits (ex., Ecosystem Services, Social)

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

Driver:
Coal-fired power plants release nutrients and are facing more stringent nutrient NPDES permit limits.
**Pilot Trades (2012-2015)**

30 farmer contracts
45,000-60,000 lbs N/yr
15,000-20,000 lb P/yr

Focus on KY, IN, OH
Details of Pilot Program

- Location of Pilot Trades
- Overall Credit Process
- Watershed Model
- Agricultural Baselines
- Reserve/Insurance Pool
- Incentives for Early Buyers
- Adaptive Management

Pilot Program Plan can be downloaded at: www.epri.com/ohiorivertrading
Watershed Model

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 providing a road map to calculate TMDLs for most nutrients. It also provides a road map to guide implementation plan. The scientific basis of the model includes several peer reviews by independent experts suitable with the data extraction and watershed organized into five (5) linked modules under one, is a very user friendly tool suitable for expert watershed model that calculates daily runoff, shallow quality of a river basin. A river basin is divided into a canopy and soil layers), stream segments, and lake sections. Land surface is characterized by land use/cover and catchments to calculate snow and soil groundwater re-charge to river segments. Water is
## Credit Trading Registry

![Credit Trading Registry Interface](image-url)

### Markit Environmental Registry

#### Find Units By
- **Project**
- **Account**
- **Name**
  - American Farmland Trust
  - American Farmland Trust Sub-Account

#### Project Details

<table>
<thead>
<tr>
<th>Project</th>
<th>Account</th>
<th>Origin</th>
<th>Holdings</th>
<th>Measurement</th>
<th>Status</th>
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</table>
Credit Stacking

EPRI-MSU N2O Offsets Protocol -- "Quantifying N2O Emissions Reductions in US Agricultural Crops through N Fertilizer Rate Reduction"

Focus on stacking water quality and GHG credits associated with reduced fertilizer use on farms.

Environmental credit markets for mitigating impacts to wetlands, endangered species, water quality, and carbon emissions have been established throughout the United States. These markets offer economic incentives for private landowners to protect natural resources, and the credits generated through such conservation actions may more effectively offset impacts than traditional technological, fee-based, or project-by-project approaches. While there are concerns regarding the ecological validation of these markets, interest in market-based mitigation is growing, and regulatory agencies have developed policies that guide market practices. Recently, there has been much debate (and confusion) about whether a conservation project should be allowed to produce credits for multiple markets, a practice broadly referred to as credit stacking. This Article presents results of a U.S. national survey on credit stacking, discusses several stacking scenarios, and offers thoughts on the need for agencies to provide clearer rules on transactions involving stacked credits.

Conservation on private lands can produce a suite of important ecosystem services. Restoring a wetland, for example, can result in waterfowl habitat, water filtration, and possibly carbon sequestration. Under market-based programs, conservation actions are more appealing to private landowners who are concerned about the economic consequences of regulations. The existence of four markets in which environmental mitigation credits can be sold, debate about credit stacking is intensifying.

Editors' Summary

Environmental credit markets for mitigating impacts to wetlands, endangered species, water quality, and carbon emissions have been established throughout the United States. Recently, there has been much debate about whether a conservation project should be allowed to produce credits for multiple markets, a practice broadly referred to as credit stacking. But producing stacked credits for multiple markets using one conservation action is not itself controversial; rather, confusion arises when different actions are stacked.
Project Schedule

• Signed Trading Plan – August 9, 2012
• BMPs: Begin in Spring 2013
Contacts & Questions

Jessica Fox
Jfox@epri.com
650-855-2138

www.epri.com/ohiorivertrading