EPRI | ELECTRIC POWER RESEARCH INSTITUTE

Ohio River Basin Trading Project

March 2014 **Project Update**

Project Highlights

Ohio River Basin Stewardship Credit Transactions

With participation from Ohio, Indiana, Kentucky, United States Department of Agriculture, United States Environmental Protection Agency, Soil and Water Conservation Districts, advisory groups, farmers and other stakeholders, the Electric Power Research Institute (EPRI) will showcase the first voluntary, verified, and quantified stewardship credits for water nutrients in the Project. The public event on March 11th in Cincinnati marks a historic milestone for the only interstate water quality trading project in the world.

What is a Stewardship Credit?

A "stewardship credit," like any other water quality credit, is a quantified and verified representation of a reduction of a pollutant. What makes a stewardship credit different is that it will not be applied towards a regulatory permit obligation. A stewardship credit can therefore create a net gain in water quality. In order to test program design elements, the Ohio

River Basin Water Quality Trading Project had to promote early and voluntary participation by point source buyers, even in advance of compliance drivers such as numeric nutrient criteria. The business case reasons for purchasing stewardship credits that cannot be applied towards a

Manager Message

The project is coming to a crescendo, centered on the first credit transactions happing on March 11, 2014 with the transfer of "stewardship" credits to **American Electric Power**, **Duke Energy**, and **Hoosier Energy**. These three organizations will long be remembered as the first buyers in this program. With the official transfer of the first interstate, voluntary, and quantified stewardship credits, we are testing many critical program design elements. With the support of state agriculture agencies and soil and water conservation districts, we have moved private money from EPRI all the way to farmers. We've funded cover crops, heavy use areas, milk house waste management, and other conservation projects that are designed to reduce nitrogen and phosphorous loading. Many of these projects have now been installed, *verified* with on-ground inspection by the state agriculture agency, and *certified* via desk audit by the state permitting authority. We are also ready to officially launch the credit Registry—a secure, online tracking system that follows a credit from creation to sale and beyond. To support our commitment to public engagement, we've posted many more resources to our website, published a project video with footage of a few of our farmers, and posted a water quality trading infographic that even my neighbor can understand!

There has been tremendous input, technical research, infrastructure development, and on-the-ground work. We commend the contributions of all of the stakeholders and participants in this project. We have learned many lessons and look forward to brainstorming the resolution of open issues as we continue to advance the science and understanding of water quality trading.

Sincerely,

Jessica Fox
EPRI Technical Executive

permit obligation include: 1) Quantified ecosystem benefits that can be applied towards corporate sustainability goals; 2) Flexible compliance schedules in the future, if stricter permit limits are assigned, and 3) Experience in the program that will create comfort for future participation. In acting as the credit seller for the first transactions, EPRI requires that "... the Parties recognize that improving water quality in the Ohio River Basin is of individual and collective value; that the transaction of nutrient credits for stewardship purposes may advance this shared value by reducing nutrient loading in the Ohio River Basin and providing additional ecological and social benefits; and that the experience gained and the reporting of the results of this undertaking are expected to benefit the public."

Price of Credits

This is a new program and there is little market-based pricing information available. Therefore, we chose to use a cost-based price model to support the first credit transactions in the program. Our goal was to use a pricing method that incorporates the full cost of implementing the program assuming there was no government or state subsidy. At a summary level, we included: 1) the cost of project activity done on the farm, 2) the cost of project administration, and 3) the cost of addressing project risk. For the first transactions, we have sold a 3-year stewardship credit for $10 each. Each stewardship credit represents a bundle of quantified nitrogen and phosphorous reductions, plus qualitative ancillary ecosystem benefits (pollinators, soil health, greenhouse gas reduction, etc). If the credits were unbundled and sold as individual pounds of nitrogen or phosphorous, each pound of either nitrogen or phosphorous would cost $10 under our pricing system. Going forward, we plan to use an auction to sell credits, where the credit price will be determined by traditional market supply and demand forces. Our program will only issue credits after conservation projects have been implemented and verified. Our ultimate goal is to have a sustainable, replicable and independent program less reliant on state and federal funding.

Does Water Quality Trading Improve Water Quality?

Water quality trading matches buyers and sellers to reduce nutrients to a level that is required by a facility's Clean Water Act permit (NPDES permit). A permit requirement has to be met no matter what, either through use of installed technology or by other approaches that can achieve the same pollution management targets. So in the cases of water quality trading to meet permit requirements, as with most environmental market off-set approaches, there is no inherent net improvement. Trading is a mitigation alternative intended to offset ecosystem impacts, but not inherently designed to restore or improve ecosystems. However, trading can be more cost-effective than installing treatment technology and may provide important ancillary benefits like carbon sequestration, enhanced wildlife habitat, and better farming practices. Stewardship credits on the other hand, do represent voluntary improvements in water quality that would not otherwise occur (see Stewardship discussion above).

Trading Plan Amended in October 2013

The nation's first interstate trading plan was signed by Ohio, Indiana, and Kentucky on August 9th, 2012. The trading plan describes the rules and approach for the pilot period, and includes an adaptive management component to allow for adjustments in the plan to achieve optimum effectiveness, efficiency and environmental improvement. In October of 2013, the Signatories signed the plan's first amendment.

The amendment included:

- **Incentives for stewardship credits** (mentioned above in 'What is a Stewardship Credit?').
- **Requirement that modeling take into account farm specific variables.** The Pilot is utilizing the EPA Region 5 spreadsheet and the amendment now clarifies that rather than using generic default values, the calculations must take into account variables such as soil types, slopes, cropping history, prior tillage practices, and number of livestock to calculate edge-of-field load reduction estimates for each project.
- **Approval of the use of the Ohio Department of Natural Resource's Load Reduction Spreadsheet V2.2.** This calculator is recognized by the Ohio Water Quality Trading Policy and is needed since the EPA Region 5 spreadsheet model (the approved credit estimation tool during the Pilot) does not estimate nutrient reductions for milk house management practices.
- **Support of the use of stewardship credits as supplemental environmental projects** or for other appropriate mitigation purposes in environmental enforcement proceedings (see p. 12 for additional details).

THE WALL STREET JOURNAL.

Wall Street Journal Features Ohio River Basin Water Quality Trading Project

The February 19th edition of the Wall Street Journal featured the story "Trading System Tackles Waste: New Plan Pays Farmers to Curb Agricultural Runoff that Pollutes the Gulf of Mexico." The article described the projects of Arthur Hollinger and Allen Kirkpatrick, two of the farmers participating in the pilot. The article also described the link between actions in the Ohio River and the greater Mississippi River Basins.

Lights! Camera! YouTube!

Check out our video about water quality trading and the Ohio River Basin Water Quality Trading Project

Project Resources Going Public

The Ohio River Basin Water Quality Trading Project undertook a thorough update of its website in February of 2014. The website is designed to be a public resource for information and expertise on water quality trading in the Ohio River Basin. New resources posted include:

- The calibrated watershed models used in the Project
- Project templates including a farmer funding announcement, farm baseline eligibility form, sample farmer contract, credit verification report, credit certification report, and many more
- The amended trading plan (October 2013)
- A new agricultural engagement webpage
- An updated advisory committee webpage

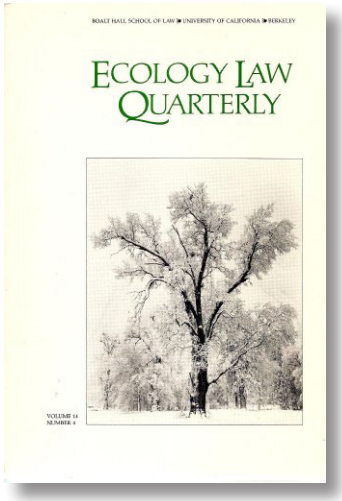
EPRI Publishes Technical Report with Case Studies of Water Quality Trading Being Used for Compliance with Permit Limits

For a dive deep into the world of water quality trading, EPRI compiled a series of 18 case studies on National Pollutant Discharge Elimination System (NPDES) permits that incorporate water quality trading. While there is a great deal of published work describing, instructing and analyzing water quality trading, there is little if any research regarding the permits in which water quality trading is operationalized to meet compliance obligations. This EPRI report (3002001454) aims to illuminate otherwise hypothetical discussions regarding the status, details, and frequency of applying water quality trading credits towards permit compliance obligations in the United States. Some overall observations are as follows:

- Of the permittees: ten were wastewater treatment plants or authorities, four covered multiple individual facilities, two were food or beverage companies, one was an electric power plant, and one was an agricultural cooperative.
- The main categories of sellers were agricultural landowners, individual point source facilities, and credit exchange associations.
- Seven of the permits have language that allows water quality trading, but to the best of our knowledge, credits have not been applied towards a permit obligation. There are various reasons for this including a lack of regulatory need for applying the credits, not having had time to execute trades due to relative nascence of the permit, or the water quality trading program not maturing to the point of trading.
- Fifteen of the permits allowed trading for nutrients (nitrogen and/or phosphorus), two for temperature reduction, two for CBOD5 (five-day carbonaceous oxygen demand), one for ammonia, and one for total dissolved solids (TDS).

EPRI's Research on Credit Stacking

Environmental credit markets have been established to offset impacts to wetlands, endangered species' habitat, water quality, and the global climate system. There have been ongoing hypothetical debates that explored the concept of credit stacking, whereby a conservation project can produce credits in multiple markets. The rules governing sales of these stacked credits are still in development and proper balance must be struck to protect the environment and the market participants.



EPRI and research collaborators have informed the credit stacking debate for the last decade by providing facts and research. In January, Royal C. Gardner, Stetson University College of Law, and EPRI's Jessica Fox published a comprehensive article in Ecology Law Quarterly, The Legal Status of Environmental Credit Stacking (40(4):713-758), providing background on environmental markets, credit stacking, and considerations for a credit stacking protocol. The authors offer six con-

siderations for striking a balance between the public interest in environmental mitigation and the credit producers' interest in financial return. On February 11, 2014, EPRI supported a full public webcast where Gardener and Fox presented the results of the research and answered audience questions; this webcast can be downloaded from http://wqt.epri.com/credit-stacking.html.

Beyond the First Trades: What's Next?

EPRI's interest in the Ohio River Basin Project has been to apply rigorous systems to test whether water quality trading can be economically, socially, and ecologically viable over the long run. The collaborators have learned many things to reach this point and we plan to capture our observations in a full EPRI report. Our commitment to an adaptive management approach has been fundamental to the project, as well as the unwavering commitment to defensible science, transparency, and integrity. The next phase will include describing the remaining issues before credits can be used for permit compliance obligations, such as how to provide the public the ability to ensure permit obligations are being met when trading is used. EPRI plans to also test the auction functionality of the Registry, by holding a public auction for stewardship credits in late 2014. It is still to be determined if, after applying all necessary rigor and science, the market will support the resulting price of the credits.

Project Collaborators

- American Electric Power
- American Farmland Trust
- Duke Energy
- Electric Power Research Institute
- Exelon Corporation
- Hoosier Energy
- Markit Environmental Registry
- Ohio Farm Bureau Federation
- Ohio River Valley Water Sanitation Commission (ORSANCO)
- Tennessee Valley Authority
- Troutman Sanders, LLP
- The Mosaic Company Foundation (via American Farmland Trust)
- U.S. Department of Agriculture
- U.S. Environmental Protection Agency
- University of California at Santa Barbara

Project Overview

Water quality trading is a market-based approach to achieving water quality standards through programs that allow permitted dischargers to purchase pollution reductions from another source. EPRI's Ohio River Basin Trading Project is a first-of-its-kind interstate trading program with initial participation from Ohio, Indiana, and Kentucky. The successful implementation of this Project will allow power companies, farmers, and other industrial and municipal dischargers to work together to improve water quality, minimizing costs to the public and stakeholders. The Project will benefit receiving water bodies that are now threatened by nitrogen and phosphorus pollution, which drain to the Gulf of Mexico. New developments in the project are leading towards selling "stewardship" credits, rather than simply selling credits used towards meeting a permit requirement.

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EPRI intends to support a collaborative process for the development of this project. The project website was designed to facilitate communication of important project materials, and to solicit questions, comments, and feedback from the many interested stakeholders. Please visit the project website for more information and to download meeting materials, related EPRI reports, Frequently Asked Questions, and additional project resources.

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