

### Barriers and Solutions for Farmer Participation in the Ohio River Basin Water Quality Trading Program

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Technical Update, September 2011

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### ABSTRACT

As part of a multiyear collaborative effort, American Farmland Trust (AFT) convened six listening sessions with approximately 150 agricultural producers (farmers) in the Ohio River Basin (ORB) to determine their readiness to sell nutrient credits in a regional water quality trading (WQT) market. In a WQT market, municipal wastewater treatment plants, industrial manufacturing plants, and electric power companies can purchase nutrient credits to meet their regulatory requirements. They pay farmers to implement best management practices that reduce the loss of nutrients (such as nitrogen and phosphorus) and soil sediments from farms; in exchange, the farmers are given nutrient offset credits. Participants in the agricultural listening sessions identified potential barriers to their participation as credit sellers in a regional WQT program and proposed solutions to overcome those barriers.

#### **Keywords**

Agriculture Barriers Farmers Ohio River Basin Solutions Water quality trading

## EXECUTIVE SUMMARY

To secure input from agricultural producers (farmers) prior to developing a framework for a regional water quality trading (WQT) market in the Ohio River Basin (ORB), American Farmland Trust held six listening sessions with agricultural producers (farmers) between 2009 and 2010. Approximately 150 producers from Ohio, Kentucky, Indiana, and Illinois attended the sessions.

To secure producer participation in the proposed regional WQT market in the ORB, listening session participants recommended the following:

- A minimum of paperwork with simple, one to two-page contracts
- Mechanisms to avoid wild swings in credit valuation and prices
- Options for dealing with nonperformance issues
- Access to technical assistance
- Information about the way that credited best management practices (BMPs) will affect crop yields
- Synergy with existing cost-share programs
- Use of trusted intermediaries (to aggregate credits and to monitor and verify credited BMPs)
- Consistent and transparent rules

Producers reported that the project should disseminate information about the developing WQT market in the ORB as soon as possible in order to recruit producers who will sell WQT credits in the next three years. Producers are likely to be more concerned about the size of credit payments and associated obligations than the source of payments (that is, a WQT market versus other payment sources).

Producers identified the critical program structure issues for agriculture as the following:

- Identifying and engaging groups to act as aggregators
- Technical assistance providers and credit monitors and verifiers who are trusted by producers to act in their best interests
- Whether to establish baseline requirements (that is, producers would have to meet a certain level of stewardship prior to selling credits)
- Whether the market can find an optimal way to work with existing federal and state cost-share conservation programs
- Whether the market needs to engage absentee landowners
- How trading ratios are established
- How risk and liability are shared

Producers thought the best way to manage the development of a trading market structure—given the size of the ORB—was to recruit 10 to 15 representatives who can speak for and are accepted by farmers (an agricultural stakeholder committee) and use this committee to help make critical decisions. To more fully engage producers, they recommended the following:

- Hold listening sessions with producers to vet concerns
- Use these concerns to help inform and develop the market structure
- Try pilot trades to test various elements of a trading structure
- Vet draft program structures based on pilot trades

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## **1** INTRODUCTION

American Farmland Trust completed six listening sessions with agricultural producers (farmers) in the Ohio River Basin (ORB) to discuss barriers and concerns to participating as credit sellers in a regional water quality trading (WQT) market. The following listening sessions were held:

- 1. Troy, Ohio. April 21, 2009. Partnering with the Miami Conservancy District, Ohio Farm Bureau and the local Soil and Water Conservation Districts (SWCD);
- 2. Bluffton, Indiana. March 8, 2010. Partnering with the Conservation Technology Information Center, local SWCDs and the Indiana Farm Bureau;
- 3. Terre Haute, Indiana. March 9, 2010. Partnering with the Indiana Farm Bureau;
- 4. Columbus, Ohio. July 6, 2010. Partnering with the Ohio Department of Natural Resources and the Ohio Federation of Soil and Water Conservation Districts.
- Columbus, Ohio. August 26, 2010. Partnering with Ohio Farm Bureau Federation and USDA Natural Resource Conservation Services to collect input on the Nutrient Tracking Tool.
- 6. Sardinia, Ohio. October 14, 2010. Partnering with the Ohio Farm Bureau Federation, the Ohio Department of Natural Resources (DNR), the Ohio SWCDs, the Kentucky Farm Bureau Federation, the Kentucky DNR and the Kentucky SWCDs.

At each listening session, we presented a short overview of WQT and then facilitated a wideranging discussion, particularly focusing on issues that have arisen in other point-nonpoint source trading efforts (the August 26th, 2010 session was predominately focused on collecting input on the USDA-NRCS Nutrient Tracking Tool, but other general input on WQT was also collected). The listening sessions have helped us more fully understand what kind of WQT market structure might work best for agriculture in the ORB.

## **2** AGRICULTURE IN THE OHIO RIVER BASIN

To understand the perspective of producers regarding WQT, it is useful to consider the general circumstances under which they live and farm. This section provides a brief overview of agriculture in the ORB.

The ORB is bounded by the Great Lakes drainage to the north, the Appalachian Mountains to the east, the upper Mississippi River drainage to the west, and several river basins to the south and southeast that discharge to the Atlantic and Gulf coasts. The river forms the northern borders of West Virginia and Kentucky and the southern borders of Ohio, Indiana and Illinois until it joins the Mississippi River near the city of Cairo, Illinois. It is the largest tributary of the Mississippi River by volume (30 percent) and supplies the majority of the water that flows in the Mississippi downstream from Cairo, Illinois. Most of the ORB is drained by tributaries and less than 5 percent of the basin runoff drains directly into the main stem. Presently, over 27 million people live in the basin with a projected population growth of 10.7 percent—or roughly 3 million people—through 2030. There are 548 counties either wholly or partially within the basin (1,131 cities, 846 towns and 654 villages). Almost 20 percent of these counties are rural [1].

Agricultural lands cover about 35 percent of the basin and are primarily located in Kentucky, Ohio, Indiana and Illinois. The latter three states have prime farmland soils ideal for growing crops in 50 percent or more of their farmland area. Agriculture includes various row crops (corn, soybean, wheat), hay, livestock, poultry and dairy products; orchards; and other agricultural products. The Ohio River Valley Sanitation Commission (ORSANCO) estimates that average daily nitrogen loads are typically higher on major tributaries in the lower portion of the Ohio River, indicating a correlation between loading and agricultural land use. Overall, the largest nutrient and sediment loadings originate from the Wabash River, Tennessee River, Great Miami River and Scioto River [2].

Although USDA has not yet released the conservation practice treatment needs for the ORB, the agency has released analyses of both the Upper Mississippi River Basin (UMRB) and the Chesapeake Bay Region. In the UMRB, 62 percent of cropped acres are under-treated for one or more issues with sediment loss, nitrogen or phosphorus lost with surface runoff and nitrogen or phosphorus loss in subsurface flow and 15 percent of cropped acres are critically under-treated and highly vulnerable to nutrient and soil loss [3]. In the Chesapeake Bay, 61 percent (2.6 million acres) of the cultivated acres may require additional nutrient management to reduce sediment and nutrient loss, 20 percent require additional erosion control practices and 19 percent are critically under-treated, requiring treatment for multiple natural resource problems [4]. A similar percentage of cropland in the Ohio River Basin may need additional conservation practices to reduce the runoff of nutrients and sediments.

To get a better sense of needs, attitudes, and receptiveness to WQT in the lower portion of the Ohio River, American Farmland Trust held listening sessions in Ohio and Indiana, drawing producers from Ohio, Kentucky, Indiana and Illinois. A brief snapshot of agriculture in these states shows both similarities and differences.

#### Ohio

Ohio [5] has 40,948 square miles (106,055 sq km) of land with 53 percent in agriculture. There were 75,000 farms in 2007 (last agricultural census) with an average farm size of 184 acres (0.75 sq km). Much of the state has fertile, flat soils and adequate rainfall and agriculture is Ohio's largest industry. Corn and soybean are the top crops along with winter wheat, hay, processing tomatoes, apples, grapes and many other crops. Absentee landowners own slightly over half of Ohio's farmland acres. About 55 percent of Ohio's agricultural soils need drainage improvement to minimize soil erosion, excess soil-water conditions in the plant root zone, and unfavorable field conditions for farm equipment in the spring and fall, very similar to agricultural drainage needs in Indiana and Illinois. The southern half of the state drains into the Ohio River Basin.

#### Kentucky

Kentucky [6] is slightly smaller than Ohio and about 54 percent is in farmland. The state had 85,300 farms in 2007 with an average farm size of 164 acres (0.66 sq km). The top agricultural commodities include horses and mules, broiler/meat chickens, corn, cattle and calves, and soybeans. Kentucky farms were required to implement a water quality plan by 2001 based on guidance from the Kentucky Agriculture Water Quality Plan which offered BMPs in six different areas: Silviculture, Pesticides and Fertilizers, Farmstead, Crops, Livestock, and Streams and Other Waters. Each BMP includes definitions and descriptions, regulatory requirements, Agriculture Water Quality Authority requirements, design information, practice maintenance, technical assistance, cost share assistance, recommendations and references. All but a small part of the extreme west of the state are drained directly by the Ohio River—roughly 97 percent of the total area of the commonwealth.

#### Indiana

Indiana [7] has 36,185 square miles (93,719 sq km) of land with 67 percent in farmland. Indiana had 60,938 farms in 2007 and the average size of farm was 242 acres. Absentee landowners own 55 percent of the farmland acres. Indiana ranks among the top five states in the country in the production of corn, soybeans, processing tomatoes, mint, swine, ducks and chickens. Sixty-four percent of the market value of Indiana's agriculture comes from crop production and 36 percent from livestock production. According to Purdue University, sediment is the number one water pollutant from nonpoint sources in Indiana. Over 30 percent of Indiana's cropland has sufficient phosphorus reserves to meet nutrient requirements for crop production over the next several years. Many farmers continue to apply more phosphorus fertilizer even when soil tests indicate high or very high levels. Runoff from poorly designed feedlots and manure storage facilities and manure applications can also lead to surface water contaminants. All but the northern area of the state drain into the Ohio River Basin.

#### Illinois

Illinois [8] is the largest of these four states with 56,342 square miles (145,925 sq km) and the dominant land use on private land is cropland—66.3 percent. The southeast quarter of the state drains into the Ohio River Basin. The state had 76,860 farms in 2007 with an average farm size of 348 acres (1.4 sq km). Absentee landowners own almost 65 percent of the acres in farmland. Illinois farmers own somewhere between 20 to 40 percent of the land they farm and rent the rest. A 2008 U.S. Geological Survey confirmed that Illinois watersheds, with their nitrogen dependent corn production and shallow-tiled fields, contribute the highest nutrient loads of the nine states responsible for 75 percent of the nutrient runoff into the Mississippi River. Water erosion on cultivated cropland is 3.9 tons/acre/year. Roughly 20 percent of the state drains into the Ohio River Basin, primarily through the Wabash River watershed along the border between Illinois and Indiana and the Cache River watershed in southernmost Illinois.

# **3** BARRIERS AND SOLUTIONS TO WQT

This section summarizes the input that we received regarding barriers, concerns, and solutions for engaging in a WQT program during the six listening sessions listed in Section 1 above.

#### **Best Management Practices**

According to listening session participants, the most important considerations in determining which best management practices (BMPs) or conservation practices they routinely use are: 1) economics, and 2) its potential impacts on crop yields. In our discussions on promising BMPs that WQT markets could foster to generate nutrient offsets or credits, producers mentioned: 1) BMPs that are currently out of the price range of most producers; 2) BMPs that might be implemented if some of their shortcomings were addressed; and 3) BMPs where either access to technical information or yield data might make a difference. Producers hope that WQT markets will permit them to be more flexible in how they implement BMPs, encourage them to continually improve practices based on performance (adaptive management) and allow them to respond quickly to new technologies, in contrast to the more rigidly structured and slow-to-change federal cost share programs.

Practices that producers might implement more widely if point sources helped cover their costs include Global Positioning Systems (GPS) and Geographic Information Systems (GIS) to precisely guide both tillage and fertilizer application equipment (e.g., Real Time Kinematic (R-T-K) signal precision technology can cost from \$10,000 to \$15,000 to subscribe to on an annual basis); use of grid sampling to more precisely target applications; use of slow-release N fertilizers; use of bioreactors for tile outlets; use of specialized equipment to spread manure; use of a no-tillage corn planter; the installation of two-tier stream bank/ditches (these are expensive and take land out of production but are relatively easy to maintain); and use of hybrid seeds (e.g., helping cover the rapidly escalating costs of corn varieties that use nitrogen more efficiently or produce their own source of N).

Practices with shortcomings that investments from point sources might creatively overcome include partially covering lost profits from planting lower yielding, shorter season crops to accommodate the use of cover crops to reduce run-off; incentives to keep land currently out of production in the Conservation Reserve Program (CRP) from coming back into production by allowing producers to deviate from USDA Natural Resources Conservation Service (NRCS) 10 year re-seeding requirements; crediting the use of hay-in buffers (strips that could be routinely cut for hay with both the credit payments and hay sales supporting the practice and the need for routine maintenance and reseeding); incentivizing the use of grass waterways by allowing producers to extend the seeding date beyond September (as required by NRCS); and providing additional funds for streamside fencing and riparian buffers—practices that are currently oversubscribed in NRCS cost-share programs.

Practices that show promise but may require more technical assistance or information for producers to implement include managed tile-drainage and the use of hybrid cover crops.

#### Late Adopters of Conservation Practices

If we can extrapolate from recent findings in the Upper Mississippi River Basin, over 60 percent of cropped acres in the ORB may need additional nutrient management to reduce the loss nutrients from fields, and 15 percent or more may need to be treated for multiple natural resource problems [9]. To reach producers who need to implement additional BMPs to reduce nutrient runoff (sometimes called "late adopters,"), listening session participants listed several opportunities for WQT markets: 1) Show the potential impacts of the BMP on yields since this may be more of a deciding factor than profitability, particularly if rent payments are based on crop yields; 2) Provide one program for 200 acre farmers and one for larger acre farmers who can afford to convert to precision farming. Adoption is less likely if the farmer has to spend money on changeovers or on the upfront cost to adopt. 3) Keep paperwork to a minimum and allow some flexibility so producers can adjust practices if markets or weather intervene; and 4) Use one-on-one interactions with crop advisers or technical service providers to recruit late adopters, especially if the BMP requires a change in equipment. In addition to paying for credits, the WQT market may need to build in technical assistance and have a pool of free expertise from which farmers can chose.

#### **Baseline Issues**

The underlying concept of using a baseline of BMPs as a starting point for any market is to avoid rewarding producers with a poor history of BMP implementation and make some allowance for early adopters. Buyers will only purchase offsets or credits that add new value to an existing "baseline" of environmental performance generally accepted in the community. By setting the baseline at a level that realistically assesses current performance, it should not exclude most new offsets or credits that producers might be able to provide. Buyers are looking for cost-effective credits that keep more nutrients out of waterways and farming operations that lack the necessary conservation practices to minimize nutrient runoff have a higher nutrient reduction potential than those with existing conservation practices. This means the potential to reward poor decision makers is relatively high.

The Miami Conservancy District WQT program set aside any requirements to meet a certain baseline of practices beyond those that are not otherwise required by federal, state or local laws. [10]. They decided that bringing conservation practices to farms that were not currently using BMPs had a much greater potential to improve water quality. They also felt that additional baseline requirements would create yet another obstacle to water quality improvements. Indeed, as baseline requirements increase, the supply of potential credits sharply decreases so setting baselines too high will discourage active trading [11]. One possible solution is to set a 10 to 15 year window for participation by agricultural producers before setting the baseline.

This issue generated much discussion. Most workshop participants were early adopters of conservation practices. Although markets cannot pay for credits from BMPS already in place, they may reward performance going forward. Since early adopters already have a conservation mindset, point sources could ask them to move to a higher level of performance, maybe providing a reduced credit amount for improving and maintaining existing practices. Early adopters could continue to put more practices in place, knowing they will get a premium for

incremental improvements. They suggest tying a premium to the 'safety' or 'guarantee' of the practice by rewarding those who have a proven track record and a high level of performance. These producers would be low risk for the buyer and could be relied upon to keep practices in place the longest, providing a safety factor for buyers.

#### **Contracts and Payments**

Success for many agricultural businesses may depend upon keeping their land use options flexible so they are free to react to changing demands of shifting markets. Long-term contracts and other obligations might reduce that flexibility. Conversely, some conservation activities may require a significant initial investment—either financially or in self-education, preparation and in integrating the changes into an ongoing successful farming operation. In this case, a landowner might prefer a longer-term commitment that will justify this initial investment. In all cases, the ORB listening session participants stress the need for simple contracts, minimal paperwork, consistency in the types of contracts for legally binding agreements and mechanisms to avoid wild swings in credit valuation and prices.

Although the size and sequence of contract payments are important, a flexible contract that enables farmers to respond to market signals is more important. Several producers regretted being locked into federal cost-share program contracts that prevented them from planting second year corn and taking advantage of the burgeoning ethanol market. Although producers are comfortable with 10-year contracts, they recognize that credit buyers may prefer a five-year contract if they are on a five-year permit cycle. They want a WQT market that can accommodate both different contract lengths and different mixes of practices (i.e., a mix of annual practices and longer term structural practices). Given this desire, one of the potential roles for aggregators might be to translate long-term obligations to large buyers into short-term obligations for credit sellers.

Producers prefer receiving the largest payments up front and smaller payments later to help relieve the upfront financial burden of implementing a BMP. Paying for the life of the practice is the preferred option. One participant suggests tying cash payments for credits to crop yields with higher payments in low yield years. Finally, potential WQT credit payments in a \$20 to \$30/acre range seem to strike a positive chord with participants. Based on current WQT credit payments in the Miami Conservancy District (MCD) project, producers may have to sell both nutrient and carbon credits to achieve this price range. However, while WQT payments in the MCD project do not necessarily offer more money than Environmental Quality Incentives Program (EQIP) payments, they are sometimes preferred because they offer more flexibility to producers [12].

#### **Absentee Landowners**

Absentee landowners comprise more than 40 percent of people who own agricultural land in the United States and can have a potentially significant impact on what conservation practices are used on their lands [13]. Listening session participants discussed the impacts of lease agreements on WQT credits at length. They view WQT contracts as a positive mechanism to tie operators to landowners for a longer period and allow both parties to enter into longer agreements.

To deal with absentee landowners, they suggest: 1) Follow federal cost-share program guidelines. In implementing the 2008 Farm Bill Average Crop Revenue Election (ACRE) program, USDA is trying to allocate the risk between the landowner and the leasing farmer over a five-year period that would allow leased land to participate. In the Conservation Security Program (CSP), there are tenant incentives to share part of the CSP benefit with the landowner. In EQIP, five-year contracts requiring both parties to sign-up translates essentially into a five-year rental agreement for the land operator. 2) By covering equipment purchases (e.g., tillage or precision application equipment) you bypass some of the concerns about rental versus owned land because the farmer will use the equipment on all acreage; 3) Programs could distinguish between practices that are tied to a parcel of land (structural practices); 4) Allow for a certain number of acres in a practice without tying the practice to any given field so it can be moved if the land is no longer available to the farmer; and 5) Recognize participating farmers (absentee landowners like it when "their farmer" gets a conservation award).

If the farmland in question is close to development, it is highly unlikely that the landowner will want to commit to long-term conservation practices unless there is an agricultural conservation easement on the property.

#### **Market Intermediaries**

#### Aggregators

Aggregators (sometimes known as credit banks or brokers) provide an interface for large buyers by assembling the credits from a multitude of small, individual farm, ranch or forest landowners into a single, larger, market significant deal—a prospect which otherwise could seem unmanageable for the buyer. They can reduce the transaction costs of finding trading partners and verifying and monitoring credits. Intermediaries may potentially bear some liability for delivering pollution reductions specified in trading agreements [14]. Aggregators can help convert long-term obligations to buyers into shorter-term contracts with farmers and spread lump sum payments into long-term obligations. Producers generally prefer to deal with entities that they know and trust to represent their best interests and aggregators will be more effective if they have experience with and are supportive of the producers selling credits.

Several farm organizations are already involved in carbon markets and a few aggregators are already specialized in dealing with agriculture. Farmers could work with these existing aggregators or they could create a new, farmer-led organization to fill this role. A single statewide or regional entity, friendly to agriculture, could serve a role as aggregator, technical service provider, and/or negotiating agent for individual farmers in WQT transactions.

The participants in the ORB listening session trusted certified crop advisers (CCAs), technical service providers (TSPs), Soil and Water Conservation District (SWCD) staff, agricultural retailers, watershed coalitions and private sector consultants. Most feel that two separate entities will likely aggregate credits and provide technical assistance, but that some CCAs or TSPs could do both. Although agricultural retailers might be able to deliver services, those producers who view agricultural retailers as unreliable might be skeptical. As the adoption of precision agricultural equipment cuts into sales of agricultural chemicals, agricultural retailers are beginning to offer value-added technical expertise. Brokerage houses were mentioned as a

perfect fit since they are already into trading commodities and know how markets work. Participants feel strongly that: 1) We should not start yet another agency to administer the program; and 2) The distribution of funds between credit sellers, market intermediaries and credit buyers should be transparent to counter the perception that intermediaries are profiting at the expense of the farmer.

#### Technical Assistance and Support

Producers have limited time to learn about and understand a WQT market so they may prefer to turn to someone else for technical assistance. For carbon markets, the technical assistance seems to come from the aggregator. For WQT markets, conservation districts (SWCDs) seem to usually fill this role. ORB listening session participants suggested building upon the network of CCAs and training them to help deliver the credited BMPs. Although they rely on advice from their SWCDs, they are keenly aware that SWCDs are overloaded, underfunded and lack the necessary technical assistance dollars and staff. They recommend using technical assistance people who are familiar with farm bill cost-share conservation programs so they can dovetail both appropriately to maximize use of available dollars and programs.

### Monitoring and Verifying Credits

Farmers generally hesitate to allow regulators or other official or semi-official monitoring and inspection to take place on their land. Market arrangements that minimize this kind of intrusion are likely to be more appealing. On the other hand, if the monitoring is efficiently and professionally done, is clearly tied to the legitimate needs of the transaction, and if the compensation is sufficient to cover the time and inconvenience, many farmers may simply accept it as a part of doing business.

Farmers are comfortable with the Farm Security Agency (FSA) and the SWCDs and are used to being monitored. They do expect someone who knows about farming. They recommend using independent local people who are already doing monitoring in the area and who are familiar with the farm operations (e.g., CCAs, fertilizer dealers or independent crop consultants). This person can report back to the entity administering the contract using a practice verification form and that form can be sent to the buyer. Money needs to flow in the right way so it is to the consultant's advantage to make sure it works. Participants also floated the idea that the trading program could augment money to an SWCD office that is already working.

To verify and enforce conservation practice implementation, participants suggest using CCAs or SWCD staff from adjacent counties since they are not likely to want to act in an enforcement capacity in their home district and potentially offend someone who is out of compliance. Another option would be to use someone who is locally known and trusted to complete the initial compliance check. Once a deficiency is spotted, it is turned over to a technical committee or third party. The participants soundly reject the use of local Environmental Protection Agency (EPA) staff to monitor, perhaps reflecting past history.

#### Legal and Financial Liability for the Landowner

The ORB listening session participants are concerned that weather events or unforeseen problems with conservation practices might affect their performance. They suggest the following options for dealing with non-performance issues: 1) Build in an extra year into the contract. For example, what if conservation tillage residue hit 29 percent but not 30 percent as required by contract? One of the SWCDs in the Miami Conservancy District built an extra year into their contracts, offering a six-year contract (the standard MCD contract is for five years). This gives the producer an extra year to get back in line; 2) Build in an appeals process in case the practice doesn't work because of weather or verification indicates it is not up to specification. Give the farmer time to rectify the situation before dropping out; 3) Establish a bank or insurance pool (e.g., the aggregator would collect 120 credits but only use 100 credits and hold the remaining 20 credits in reserve to cover problems); or 4) Over-sign letters of intent with farmers and only pay for crops that emerge (used by the MN sugar beet cooperative).

Possible opportunity losses on federal farm programs represent yet another risk. This could occur with any practice that reduces the amount of acres available for growing a commodity crop (e.g., buffers). The number of acres in a given commodity crop (e.g., the corn base) is used to calculate certain farm payments and loss of acres reduces those payments. Should the BMP income from WQT fail, the loss of farm payments until the corn base is re-established is a notable risk.

Finally, to address concerns that point sources are in the market for the long haul, participants felt that the U.S. EPA needs to commit to permit holders that they are allowed to trade and to specify the time period.

#### Synergies With Existing Conservation Cost-Share Programs

From the federal government perspective, if a farmer uses federal cost-share dollars to implement a practice, the resulting environmental credits belong to the farmer, so the farmer can sell those credits to a private entity. However, local policies may specifically prohibit this kind of payment "stacking." Sometimes the limitations are tied to a particular practice. The ORB listening session participants feel that federal and private market programs should work synergistically and that we need to avoid any approach that ends up looking like some form of a "double-dipping."

They recommend a variety of approaches to increase the synergy among programs. For example, producers might be able to use WQT credits to implement practices that will allow them to qualify for a higher tier in CSP and receive higher payments. Other possibilities include using federal cost-share programs to reach the baseline of conservation practices required by the market to be eligible to sell credits or discounting credits that result from federal cost-share dollars (e.g., if EQIP has covered half of the cost of installing a grass buffer, the resulting credits are discounted by 50 percent. In this case, the WQT program is covering the other half of the costs of installing and maintaining the buffer.) WQT credit dollars could also be used to extend the life of an existing practice. WQT credit dollars might be able to reach those producers who don't like government programs. Also, WQT credits might come with lower transaction costs (e.g., EQIP dollars can drive up the cost of a project and the project ends up costing much more

than if you do it on your own because of lots of red tape, process costs, etc.). The WQT credit dollars will also be more attractive if they are more flexible than cost-share. Finally, technical assistance people who know both federal and private programs can help maximize the use of available dollars and programs.

Yet another suggestion was to piggyback monitoring and verification of WQT credits in the field with similar on-going efforts in other cost-share programs with savings accruing to both programs.

### **Credit Stacking**

Producers felt that the ability to sell multiple credits from the same practice would make any trading program more appealing to producers (e.g., the BMPS that reduce nitrogen or phosphorus may also remove soil sediment, create wildlife habitat, enhance canopies to shade creeks and streams and lower temperatures, stabilize stream banks, reduce the flow velocity during heavy rains, create wetlands and preserve floodplains that help reduce the risk of flooding). The ability to sell these ancillary benefits is known as "credit stacking." In the AFT Sauk River, Minnesota WQT project, producers who use conservation tillage have less soil erosion, reduce their phosphorus runoff and sequester carbon and producers will get paid for phosphorus, carbon and turbidity credits. Dividing out the credits means you can bring the dollars received for a practice from \$2 or \$4 per acre up to \$15 to \$20/acre by generating multiple credits for multiple buyers from single practice [15].

#### **Outreach and Publicity**

Producers were adamant about immediately letting farmers know about a potential ORB WQT market. They feel we will need at least three years of outreach to producers to make them comfortable with a new program and recruit enough sellers. They identify keeping land in farming as one of the selling points for WQT although this could be a double-edge sword if people think farmers are already getting too many subsidies. Delivering information from agriculture's perspective might be important so they suggested establishing a formal clearinghouse. Other suggestions include: 1) Have the utility companies (or municipal wastewater treatment plants) send a brochure to their customers telling them how much their local farmers are saving them on their utility bills by providing low cost credits. The utility companies could send out a brochure targeted to absentee landowners that talks about farm bill conservation programs and trading programs. ORB listening session participants recommended targeting, educating and certifying younger farmers (20 to 50 years old) since older farmers (51 to 70 years old) may soon be retiring. Actively engaged farmers, farmers who are expanding their operations with younger generation farmers are most likely to sell credits.

#### **Other Issues**

#### Desirable Market Size

Participants need consistency in rules across a market regardless of its size. They cite the confusion caused by the different priorities for CSP in different areas. Farmers like the idea of local markets but recognized they were more likely to be state level markets. Mainly, farmers want to know the rules—if not in compliance, how do I appeal? By providing opportunities for many farm operations of many different types, WQT markets might expand the availability of supplies from farmers and increase the popularity of these markets. To market the WQT program, it probably doesn't matter if the program is local, state or regional and the credit buyers may want to hire just one company.

#### **Public Perception**

Some producers are concerned about being perceived as "enablers," that is, their nutrient credits will enable companies or municipal wastewater treatment plants to "continue to pollute." This concern diminishes when we explain that regulated point sources are required to meet water quality standards by treating or reducing their discharges. What's being traded is the amount of nutrient that must be reduced or removed to meet new, more restrictive standards for nitrogen or phosphorus. The EPA policy on WQT requires that the resulting water quality be the same or better than that achieved by infrastructure/technology upgrades. In addition, best management practices may deliver ancillary ecological benefits for the watershed (like creating more wildlife habitat or sequestering carbon to mitigate greenhouse gases) that infrastructure and technology upgrades cannot provide.

#### **Crediting Tools**

Listening session participants advocated for easy-to-use crediting tools on the internet (characterized as a "plug and chug" tool). They suggested offering greater incentives to those who register online.

#### **Privacy Issues**

Although they caution against publicizing the names of individual producers, the listening session participants are okay with information attributed to a county or watershed. However, they concluded that participants in WQT should expect that information from their WQT contracts will end up in the public domain.

#### **Potential Credit Buyers**

Participants viewed rural electric companies as potential credit buyers with high customer satisfaction and recommend we reach out to them in this market.

## **4** CONCLUSIONS

Participants in our listening sessions are supportive of WQT and are receptive to selling credits. Although selling nutrient credits as a commodity is a new concept for agriculture, farmers understand commodity markets and responded accordingly. It is interesting to note that several producers we talked to in Troy, Ohio had submitted bids to implement conservation practices for the Miami Conservancy District WQT project, but were not really aware they were participating in water quality trading. They viewed the program as yet another source of funding to implement conservation practices and that is how some of the SWCDs were marketing the program.

Overall, a thriving WQT market that enlists producers as credit sellers will be one that inspires trust and confidence, has transparent transactions, uses trusted intermediaries, includes recognition of how conservation practices fit with current farm operations, and, of course, has minimal paperwork.

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