

Market-Based Nutrient Trading for Improving Water Quality (Tools and Approaches)

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The runoff generated through the impact of rainwater carries with it the sediments and a variety of nutrients. These pollutants accumulate in waterbodies thus deteriorating the water quality and making them unfit for their intended uses. It has been recognized that controlling these pollutants at their source of origin is much more cost effective than cleaning the wastewater / stormwater through sewage treatment plants. Thus sewage treatment plants would benefit significantly if they are allowed to trade nutrient / water quality credits with upstream non-point sources to meet their National Pollution Discharge Elimination System (NPDES) permitting requirements.

Nutrient trading permits the sources (both point and non-point) that exceed their environmental obligations on different water quality pollutants to earn and trade credits with others who are not able to meet the requirements. It uses market mechanisms to produce nutrient reductions both from the point and non-point sources and improving the water quality of the region. Besides cost benefits, the pollution control practices such as buffer strips when implemented at non-point sources offer added benefits such as controlling multiple pollutants and providing wildlife habitat.

Several state and local agencies around the nation are implementing nutrient trading programs for different pollutants such as nitrogen, phosphorus, etc. According to Mr. Mike Johanns, the Secretary of Agriculture, the US Department of Agriculture, the Market-Based Environmental Stewardship is a pretty straight forward idea. It encourages environmental friendly activities like producing cleaner air and water, preserving wetlands and habitat for endangered species, and reducing green house gas emissions.

Recognizing the importance of this approach, the Natural Resources Conservation Service of the USDA has embarked on developing tools to facilitate its implementation. One of such tools is the Nitrogen Trading Tool (NTT). It provides a user-friendly, web-based interface that producers could use to calculate nitrogen savings from varying agricultural practices and agronomic management approaches at farm and field level. The streamlined interface will deliver input to a rigorous centralized computer simulation model. The model will simulate the effects of the base and alternative management systems using historical weather data and site specific soil characteristics. Finally, the tool will deliver a comprehensive report with nitrogen values. If there is a net savings of nitrogen, it may be available to trade or bank in water quality markets. The development of water quality trading tools provides the first step to certification and linking buyers and sellers.

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The presentation summarizes the market based initiatives and how they are playing a prominent role in improving water quality both at an individual water body and the watershed level. It also elaborates on the NTT providing its salient features and how it could be used for estimating nitrogen delivery to the environment.