WABASH RIVER (IN, OH & IL) WATER QUALITY TRADING FEASIBILITY ASSESSMENT FOR THE CONSERVATION TECHNOLOGY INNOVATION CENTER, WEST LAFEYETTE, IN

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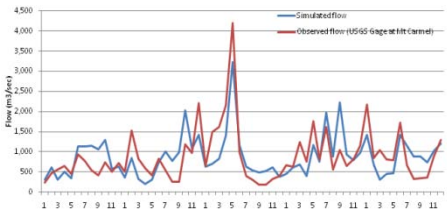
Project Costs: **$199,000 (74,000 K&A)**

Project Completion: **2010**

Under an EPA Targeted Watershed Grant to the Conservation Technology Innovation Technology Center (CTIC), K&A along with TetraTech, Inc. conducted watershed and river water quality modeling to assess water quality trading (WQT) supply and demand in the Wabash River basin. This watershed covers the majority of the state of Indiana and is one of the largest contributors of nitrogen to the Gulf of Mexico. K&A used the Soil and Water Assessment Tool (SWAT) to model agricultural contributions to water quality from this land use that represents approximately 70% of the land cover in the basin. Water quality modeling conducted by Tetra Tech examined fate & transport characteristics of the basin that will influence instream nutrient delivery to the Ohio River.



K&A was principally responsible for the supply side analysis. This included evaluation of farmer implementation and opportunity costs of BMPs…critical for determining the potential economic benefits of WQT and conveying these benefits to wastewater treatment facility representatives and farmers. K&A focused on an annual payment analysis for three different BMPs including cover crops, residue management and filter strips. Each BMP has a different life cycle, and each with associated opportunity costs, establishment costs, operation and maintenance (O&M) schedules and replacement costs. To overcome differences in schedules and pricing, a Life Cycle Cost (LCC) analysis used a present worth calculation providing present day equivalent costs for each BMP. The present worth analysis considered all expenditures made, including: 1) current investments, 2) annual payments, and 3) one-time future payments. This present worth analysis was performed using a three percent inflation factor and a 20-year BMP implementation period, including replacement costs if BMP design life is less than 20 years. The LCC analysis then converted the present worth into a twenty-year annual payment assuming a five percent discount factor. This was the first such time that this level of cost analysis has been included in trading feasibility studies.

Summary of BMP Credit Production and Annualized Life Cycle Cost per Acre

	Credits / Acre of BMP			Cost / Acre				
				No Opportunity Cost		Opportunity Cost Included		
BMP Scenario	TN	TP	Combined	50% (EQIP Equivalent)	Full Cost	$4.00 / bu	$6.00 / bu	$8.00 / bu
Filter Strips (Prime)	240	26.4	266.4	$59.29	$118.58	$291.79	$704.29	$1,116.79
Filter Strips (Marginal)	240	26.4	266.4	$59.29	$118.58	$85.54	$394.92	$704.29
Cover Crops	3.6	0.3	3.9	$42.60	$85.19	$44.20	$23.70	$3.21
Residue Management		0.3		$28.59	$57.17	$103.29	$126.35	$149.41

3% inflation rate
5% discount factor
Land use not included in LCC analysis
Indiana EQIP payment used as 50% of establishment costs
O&M costs referenced from Indiana EQIP

The feasibility study provided insight as to where WQT might encounter geographic barriers in select subwatersheds in the Wabash (e.g., those with karst features or impoundments) and what type of trading framework might be most appropriate based on the sources with the greatest potential for participation. It was an initial step in investigating the potential for WQT opportunities in Indiana. The Indiana Department of Environmental Management and the Department of Agriculture have since committed to participating in a broader regional WQT pilot project in the Ohio River Basin (ORB). Indiana will explore trading opportunities in the Wabash and other ORB tributaries in their state. K&A is the technical consultant for these ORB efforts working with the Electric Power Research Institute, other collaborators as well as Ohio and Kentucky.