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**Water Quality in the North Fork of the Sugar Creek Watershed,
Northeastern Ohio**

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Abstract:

The Sugar Creek Watershed, identified by the Ohio Environmental Protection Agency in 1998 as one of the most degraded in the state, is a predominately agricultural watershed located in northeastern Ohio. One subwatershed of the Sugar Creek, the North Fork, attained its aquatic life use designation at two of three sites in 1998, but was impacted by sedimentation, nutrient enrichment, and habitat modification. Agricultural activities were implicated as a major reason for this impairment, specifically dairy farming. Starting in June 2002, bi-weekly water quality samples were collected at nine sites within the North Fork subwatershed through November 2007 to determine long term trends in water quality and evaluate the effects of best management practices. Dissolved oxygen, temperature, conductivity, pH, and turbidity were collected in the field using a Quanta Combo meter, while reactive phosphorous, ammonium nitrogen, and nitrate nitrogen were measured in the laboratory using a spectrophotometer, while total solids were determined using the gravimetric method. Over the sampling period, reactive phosphorus concentrations have decreased at most sites. Sites that did not show a decrease generally had lower initial concentrations of reactive phosphorus than sites that decreased. Total solid concentrations peaked in 2003 and have decreased since then. The pH remained fairly constant 2002-2006, but rose in 2007 for all sites. Dissolved oxygen levels varied seasonally, but do not show trends across the sample period. Nitrate nitrogen concentrations have varied widely, while ammonia concentrations, conductivity, and turbidity have not shown a general trend of change over time. Total phosphorous concentrations have in general remained constant. Future research will examine relationships between land use and water quality in the North Fork of the Sugar Creek watershed.

Impact Statement:

Results of this research provide a better understanding of water quality in this agriculturally dominated watershed that will form the basis of additional analyses on landuse impacts on water quality. Our results will also help design improved watershed management plans through targeted BMPs.

Category: Watershed Assessment and Restoration
Type of Presentation: Poster Presentation