

“Evaluation of nutrient and *E. coli* transport through tile drainage”

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Water quality is a global issue, and anthropogenic actions contribute substantially to the detriment of aquatic systems. Microbial contamination and eutrophication of freshwater systems continue to be an important issue. To gain a better understanding of how subsurface tile and manure applications influence water quality, we analyzed differences in *Escherichia coli* and nutrient movement in subsurface drainage water from manured and non-manured agricultural fields with and without surface tile intakes. The Water Resources Center at Minnesota State University – Mankato maintained five field-scale monitoring stations and partners with the Cannon River Watershed Partnership, Minnesota Department of Agriculture and the University of Minnesota to collect samples at an additional seven sites across southern Minnesota. Preliminary findings show that open intakes were the primary source of sediment, nutrient and *E. coli* losses through tile drainage. *E. coli* concentrations were the highest immediately following an increase in stage or velocity. Another factor in *E. coli* concentrations during rain events was soil and water temperatures. As soil and water temperatures increased, *E. coli* concentrations in samples from rain events increased. The purpose of this project was to use agriculture field-scale settings to gain insight about the movement of *E. coli* and nutrients into subsurface tile drainage systems; therefore, providing knowledge and ability to improve best management practices in agricultural production of crops.