

Phosphorus Forms and Fate in the Lower Fox River Watershed

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The effectiveness of phosphorus reduction strategies may depend on whether phosphorus (P) is in the dissolved (DP) or particulate phase as it leaves the source area. Recent analysis of historical monitoring data has shown that mean concentrations of DP range from 40 to 75% of total P (TP) in rural streams within the Lower Fox River sub-basin. This study was initiated to better understand the form in which P leaves source areas and is transported by streams through tracking DP, TP and TSS from different source areas and at different scales in the Apple Creek watershed.

Sampling was conducted at eleven rural source area sites (0.25 to 2.5 km²) and four integrator sites (12 to 85 km²) during runoff events in 2004-05. Continuous discharge and intensive sampling data was also collected on the main stem of Apple Creek (117 km²), which served as the final integrator site. Excluding 2005 data, mean TP was 0.61 mg/L from source areas, 0.43 mg/L from integrator sites, and 0.58 mg/L at the main stem. DP concentrations at two sites were significantly lower than most sites. Mean DP percentage was 41% from source areas, 44% from integrator sites and 36% from the main stem. Significant differences were detected between source areas for TP, DP, and percent DP. No significant difference was detected between events for DP. Land use, management practices and site characteristics will be examined to determine which factors best explain our monitoring results.

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