

Evaluating Agricultural Best Management Practice (BMP) Effectiveness in the Lower St. Johns River Basin, Florida

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Biographical Sketches of Authors

Pam Livingston-Way is the Lower St. Johns River (LSJR) Basin Agricultural Non-point Source Pollution Program manager. Prior to joining the SJRWMD in 1990, she earned her MS in agronomy from Western Kentucky University and served as an NRCS Soil Conservation Service District Conservationist. Pam's work with local growers and stakeholders determined the impact of agricultural non-point source pollution on LSJR water quality. Her program to develop and implement pollution reduction BMPs has done much toward meeting TMDLs established for the LSJR. She also serves on the Board of Directors for the St. Johns County Soil and Water Conservation District.

Lori McCloud is a SJRWMD environmental scientist and the Lower St. Johns River Basin Management Program Database Manager. She earned her MS in biological oceanography in 2000 from the Florida Institute of Technology, while working at the Florida Marine Research Institute designing, implementing, and evaluating biological impact assessments in coastal habitats. Since joining the District in 2001, she has been responsible for the development and maintenance of a multi-program scientific database. She also supports project managers in data analysis and project management.

Abstract

The lower St. Johns River (LSJR) is adjacent to approximately 28,000 acres of agricultural cropland commonly known as the Tri-County Agricultural Area (TCAA). This area generates large amounts of sediment and nutrient-enriched runoff that drains from a system of ditches and canals into the receiving waters of the LSJR. Studies have shown that agricultural operations are a major anthropogenic source of pollution to the freshwater portion of the river, contributing to favorable conditions for algal blooms.

The District has been working cooperatively with the TCAA growers since 1994 to develop and evaluate cost-effective best management practices (BMPs) implemented by local growers to decrease pollution loading to the LSJR. Baseline monitoring was conducted prior to BMP implementation, and is currently ongoing using nested-paired watershed sites, paired watersheds and multiple watershed stations. In addition to baseline monitoring, stormwater monitoring at these sites is now being conducted, and will allow the evaluation of BMP effectiveness during loading spikes, which typically contribute the majority of the nutrient load.

The combination of data collection during baseline conditions as well as storm events will allow a complete understanding of how BMP implementation affects water quality. This study addresses how to apply the two sampling methodologies in a way that will allow the evaluation of BMPs for both base flow and storm flow events, the temporal effects of BMPs on water quality, and will provide a comparison of the spatial monitoring designs to evaluate how they complement each other.