

# URBAN ECOSYSTEM RESTORATION: AN EXAMPLE OF STREAM AND LAKE RESTORATION IN GWINNETT COUNTY, GEORGIA

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REFERENCE: *Proceedings of the 2013 Georgia Water Resources Conference*, held April 10–11, 2013, at the University of Georgia

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**Abstract.** In order to mitigate the adverse effects that growth has had on Gwinnett County's aquatic resources, the county has developed a comprehensive Watershed Improvement Program (WIP). The focus of the WIP is to address areas negatively affected by increased stormwater flows and ongoing land use practices from urban development. The Lake Claiborne project is part of the Sweetwater Creek WIP Implementation. The goals of the restoration project were to improve water quality, habitat, biology, and the overall condition and health of Sweetwater Creek, its tributary and Lake Claiborne.

Prior to construction, the lake had a surface area of approximately 5 acres. The lake drainage area is 554 acres, with an impervious cover of 25 percent. The lake was constructed in the 1960s with a significantly larger open water footprint. The lake filled in with sediment over the years from increased development within the watershed. As a result, the stream segments were aggraded and the depth of the lake decreased. Pre-construction water quality sampling and biological monitoring determined macroinvertebrate habitats were poor. Post-construction monitoring will be performed to measure improvements.

Construction, completed in June 2011, included removing accumulated sediment to restore the original design capacity and increase flood storage capacity. The lake outlet control structure was modified to provide detention and peak flow attenuation. Stream restoration included redesigning the two streams flowing to the lake by restoring the channel geometry and profiles to improve transport of sediment load. Offline ponds for sediment accumulation were built within the original 100-year floodplain boundary of the lake. Grading was done around the lake to establish a functional littoral zone to provide additional filtering and habitat. Finally, enhancement of the riparian buffer was accomplished by removing invasive vegetation and replanting with native species.