

Connecting Data, Disciplines, and Disturbed Hydrology

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Reference: McDowell RJ, CA Pruitt, RA Bahn (eds.), *Proceedings of the 2015 Georgia Water Resources Conference*, April 28-29, 2015, University of Georgia, Athens.

Abstract. Green infrastructure (GI) planning at the busiest airport in the world requires an intimate and ongoing understanding of the complex systems that interact on the 4,700-acre site. An inventory of the hydrology of the area reveals that the headwaters of the impaired Flint River originate just north of the airport site and are then piped underneath the airport in a large concrete culvert. Vast impervious surfaces at the airport generate massive amounts of runoff that are currently handled through grey infrastructure systems and detention basins. Through the implementation of GI stormwater control measures (SCM) the airport can make significant improvements to water quality and subsurface return flows in the upper Flint River basin. This study utilized a land suitability analysis that integrates multi-criteria evaluation with GIS to determine optimum site locations for GI. The suitability analysis identified areas that are suitable for a broad variety of GI SCM given the analyzed criteria of land-cover, slope, FAA regulations, public visibility, and open drainage swales. The results of the analysis indicate 38% of the airport site as possessing high suitability values and an additional 24% as moderately suitable. Recommendations for future action are presented across spatial and temporal scales and include potential pilot sites for short, medium, and long-term action. Recommendations also indicate the importance of acquiring additional and updated soil and groundwater datasets as well as comprehensive runoff calculations to aid in planning and overall distributed system design. Overall, the study has demonstrated the relevance of a land suitability analysis as a spatial planning tool for GI and as a catalyst for interdisciplinary discourse.