
AWRA 2011 ANNUAL WATER RESOURCES CONFERENCE
Albuquerque, New Mexico

November 7-10, 2011

Copyright © 2011 AWRA

**ENHANCED RUNOFF IN URBAN AREAS AS A TOOL
TO MITIGATE LOSS OF NON-RENEWABLE GROUNDWATER**

Michael Milczarek*, Mark Murphy, Jason Keller, Tzung-Mow Yao

ABSTRACT: In semi-arid and arid locations the majority of natural recharge occurs in ephemeral stream channels. As areas become urbanized and runoff increases in response to the increased area occupied by impervious surfaces, flow in ephemeral channels also increase, creating an opportunity to capture water as focused recharge. We present case studies of semi-arid urban watersheds in which pre-development and post-urbanization recharge rates have been estimated for varying land use and precipitation scenarios. The case studies show demonstrable increases in groundwater recharge rates in response to increased impervious area (i.e. urbanization) and the focusing of runoff to capture areas. This suggests that under water deficit conditions captured runoff in urban areas can be utilized as a means to mitigate net groundwater loss, but by itself does not offer a complete remedy, and instead can serve as an important part of a larger remediation strategy.

* Senior Hydrologist, GeoSystems Analysis, Inc., 2015 N Forbes, Suite 105, Tucson, AZ 85745 USA, Phone: 520-628-9330, Fax: 520-628-1122, Email: markm@gsanalysis.com