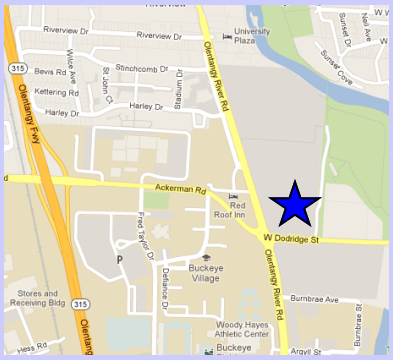
A Water Luncheon Seminar

Presented by:

The Water Management Association of Ohio
and
The Ohio Water Resources Center

January 21, 2014; 11:30 a.m. - 1:00 p.m.

Wilma H. Schiermeier Olentangy River Wetland Research Park,
The Heffner Building, 352 Dodridge St. Columbus, OH 43202



Green-Gray Decentralized Detention Infrastructure to Control Combined Sewer Overflows

Nestor Alonso Mancipe-Munoz, University of Cincinnati, Department of Biomedical, Chemical and Environmental Engineering.

Combined sewer overflows (CSO) are uncontrolled and untreated discharges of wastewater into urban streams that occur when the capacity of the collection system or the treatment facility are exceeded during heavy rainfall or snowmelt events. Resilient and affordable solutions are needed to control CSOs and help manage urban flooding and improve water quality. Typically, G*ray infrastructure* (i.e. sewers and treatment facilities) are proposed to mitigate CSO impacts. A more environmentally friendly approach called *Green infrastructure* (i.e. bio-infiltration, green roofs, rain gardens, etc) is being considered to solve this problem. Interest has grown in using a combination of "green" and "gray" infrastructure because it not only mitigates CSOs, but also maximizes social, economic, and environmental benefits. A unique framework that combines state-of-the-art mathematical modeling complemented with Geographical Information Systems (GIS) was developed to assess a non-conventional "green" and "gray" infrastructure alternative, composed of short storm sewers (gray) that convey stormwater runoff into small decentralized detention ponds (green). The detention ponds release the captured runoff back into the existing sewer at a constant rate controlled to prevent the occurrence of a downstream CSO. The proposed framework includes methods to calibrate a high resolution rainfall-runoff model, identify potential sites for small detention ponds, and produce control-operation policies. Results show that the green-gray infrastructure alternative is feasible and provides a higher CSO reduction at a lower cost than a conventional "gray only" alternative for a typical rainfall year. The framework provides a useful promising tool for evaluating effectiveness, feasibility, and operation-control of this alternative in urban areas to reduce CSOs.

Please register by January 15, 2014. Late or on-site registrations cost $5 extra and are not guaranteed a meal. For registered engineers who need Professional Development Hours (PDHs), this presentation offers 1 PDH.

[ ] WMAO Member ($10) [ ] Nonmember ($15) [ ] Student ($7) Special meal?_____

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OR, register online, with MasterCard, Visa, or Discover, at: www.wmao.org.

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