RAN Fact Sheet
Redesigning the American Neighborhood

Tackling Stormwater Runoff with Remote Sensing and Spatial Analysis Tools

An important goal of the RAN project has been to provide local neighborhoods with the best mix of stormwater management tools for their particular situation. The RAN team hopes to provide homeowners, developers, and city/state officials with a palette of stormwater interventions at various spatial scales to maximize environmental, social, and economic benefits to the neighborhood.

Tailoring a mix of approaches that combine low-impact technologies, engineering solutions, and available natural landscape features for an individual neighborhood should both enhance stormwater management and increase public acceptance of the necessary interventions.

In an effort to promote this innovative approach to storm water management, Helena Vladich and other members of the RAN team have been developing a new participatory tool for environmental consensus building called *Participatory Spatial Analysis* (PSA). PSA and high resolution remote sensing data from satellites create a powerful approach that helps residents visualize how various stormwater management options would appear in their neighborhoods.

Specific technical steps include the use of satellite images and computer models to identify watersheds contributing stormwater to a neighborhood and interlinked sub-watersheds within the neighborhood, to define stream networks, and to actually visualize the micro-network of stormwater or raindrop pathways within the neighborhood in a map-like format.

A map-like model of the micro-network of stormwater pathways within a neighborhood

Next, the team identifies neighborhood locations where intermediate-sized alternative best management practices (BMPs), such as natural swales, and small-scale interventions, such as rain gardens, might be effective. The team then estimates the size of particular BMPs possible at specific locations within the neighborhood. The outcome of this analysis is the *Integrated Modular Landscape-Based Stormwater Management* (IMLaS), a tool which can be discussed with neighborhood residents.
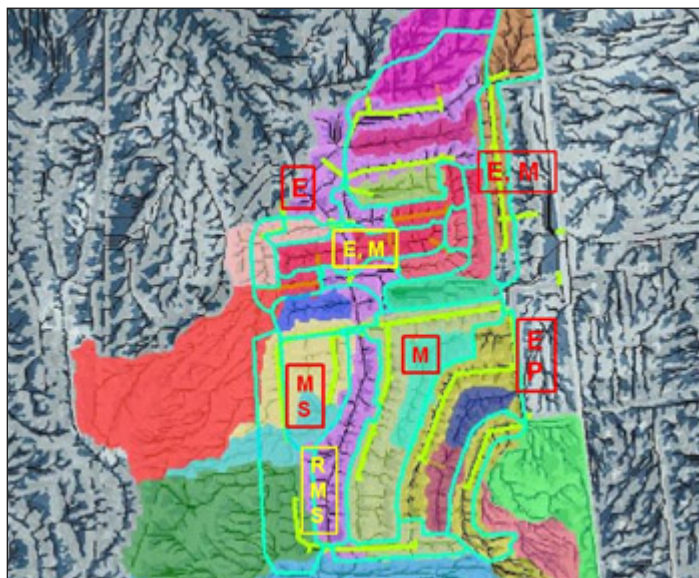
E - Engineering solutions (new green designs, constructed wetlands, bio-filtration areas, naturalized ponds
M - Medium-scale BMPs (natural swales, etc.)
S - Small-scale alternative BMPs (rain gardens, etc.)
R - Stream restoration
P - Stormwater park

Using sophisticated technologies like remote sensing and spatial analysis to identify natural neighborhood features to help manage stormwater makes good sense. Identifying natural features in the neighborhood which might be enhanced to help treat storm water offers the possibility of improving neighborhood aesthetics while, at the same time, reducing the cost per household for the overall stormwater management program. Using such low-impact approaches may not provide the entire solution for a particular neighborhood, but such features certainly have their place in the mix of interventions being considered.

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