

Green Infrastructure Program

Community Partner Profiles

2011 Partners

REGION 7: Kansas City, Missouri

Community Background

Located at the confluence of the Kansas and Missouri rivers, Kansas City is the largest city in the State of Missouri. The city is home to a population of approximately 460,000, and is the anchor of a larger metropolitan area that extends into Kansas. Like many historic cities, Kansas City is served by both combined and separate sewer systems. The city's combined sewer system spans 58 square miles and has 90 outfalls. Most of the combined sewer outfalls are located within the Blue River Basin.

Drivers for Green Infrastructure

Kansas City's aging sewer system contributes to poor water quality in the Blue River and its tributaries. Each year, Kansas City's combined sewer system discharges about 6.4 billion gallons of untreated sewage and stormwater into receiving streams and rivers. At each outfall, overflows occur an average of 18 times per year. These discharges contain bacteria, nutrients, and many other pollutants and degrade the quality of receiving waters. The large volumes of stormwater generated by the urban landscape also contribute to localized flooding and sewer backups.

Federal and state regulations require communities with combined sewer systems to develop a plan to control overflows and to monitor their effects on receiving waters. To guide the city's efforts, the mayor appointed a Wet Weather Community Panel consisting of 50 members. The panel met monthly from 2003 through 2008. The community panel identified green solutions that provide multiple environmental, social, and economic benefits as a key objective of the city's overflow control efforts. Based on this community input, the city prepared one of the "greenest" combined sewer overflow control plans ever developed. By supplementing gray infrastructure investments with above-ground, green infrastructure approaches, the city aims to provide cleaner air, cooler ambient air temperatures, recreational and aesthetic amenities, and economic opportunities.

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Green Strategies and Programs

Completed in 2009, Kansas City's Overflow Control Plan outlines a phased approach to the implementation and assessment of green infrastructure. While the early years of the plan include aggressive green infrastructure pilot projects to better understand the potential for green solutions, the middle years focus on maximizing the capacity of the existing system, improving the waste water treatment plants, and analyzing the results of the green infrastructure pilot projects. Based on the results of this analysis, green infrastructure may be substituted for earlier proposed storage solutions. The final years of the plan focus on completing improvements to the wastewater treatment plants and adjusting and building proposed storage solutions. This phased approach allows the city to engage in adaptive management, monitoring the progress of their plan as it proceeds and adjusting their approach as necessary to meet their goal.

The city is conducting its first pilot project in a 100-acre area of the Marlborough neighborhood, a residential neighborhood in the Middle Blue River Basin. A desktop analysis indicated that this pilot area is part of a larger area in which green infrastructure can offer significant cost savings. The pilot area is part of a 744-acre sewershed draining to two combined sewer overflow outfalls. While the city's initial plan called for two underground storage tanks to store three million gallons of overflow at a capital cost of \$51 million, the desktop analysis indicated that green infrastructure distributed throughout the sewershed could control this volume at a capital cost of \$35 million. The city's final Overflow Control Plan sets aside \$28 million for implementation of green infrastructure in the 100-acre Marlborough pilot project and other early pilots. Green infrastructure facilities will be installed in the public right-of-way and will include rain gardens, bioretention cells, pervious pavement, and infiltration galleries. The pilot project will provide valuable information not only on the effectiveness of green infrastructure, but also on areas of conflict with local codes and ordinances, the potential for interdepartmental coordination, socio-economic impacts, construction techniques, maintenance approaches and costs, and more. The final Overflow Control Plan includes another \$40 million to implement green infrastructure in the 744-acre sewershed draining to the two combined sewer overflow outfalls once the pilot project is complete.

Other green infrastructure components in Kansas City's Overflow Control Plan include \$5 million for rain garden and downspout disconnection programs, \$5 million for green infrastructure workforce development, and \$24 million for monitoring and modeling.