AURORA, ILLINOIS

A CASE STUDY OF HOW GREEN INFRASTRUCTURE IS HELPING MANAGE URBAN STORMWATER CHALLENGES

TYPES OF GREEN INFRASTRUCTURE USED: Rain barrels/cisterns, permeable pavement, rain gardens, infiltration trenches or vaults, vegetated swales, street trees, planter boxes, downspout disconnection, naturalized storm basins

The city of Aurora based its green infrastructure plan on the 2006 *Rooftops to Rivers* report. The city later developed a Naturalized Stormwater Management Corridor Plan (NSMCP) to address the role of green infrastructure as its single sewer pipe was replaced with two pipes. Aurora's mayor, Tom Weisner, has successfully integrated green infrastructure (GI) into the planning done by all city departments. Aurora follows Kane County's retention ordinance and has both dedicated funding and guidance on the use of green infrastructure. Unfortunately, the city has established few incentives for private-party actions, although it was instrumental in the passage of a revised stormwater ordinance for Kane County that provides incentives for developers to use green infrastructure best management practices (including rain gardens and permeable pavement) to reduce detention pond sizes. The city has no existing requirement to use GI to reduce existing impervious surfaces.

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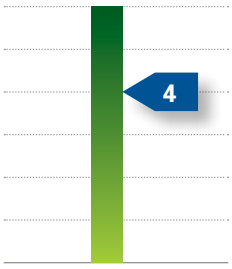

Total Criteria Score
Out of a possible 6

EMERALD CITY CRITERIA*

- ☐ Existing requirement to use GI to reduce some portion of the existing impervious surfaces?
- ☐ Incentives for private-party actions?
- ☑ Long-term Green Infrastructure (GI) Plan?
- ☑ Retention Standard?
- ☑ Guidance or other affirmative assistance to accomplish GI within City?
- ☑ Dedicated funding source for GI?

BACKGROUND

Aurora, the second-most populous city in Illinois, lies 35 miles west of Chicago and straddles Kane, DuPage, Kendall, and Will counties. Aurora has a combined sewer system that dates back to the 1800s. To date, the city has spent more than $200 million to reduce combined sewer overflows as well as improve stormwater conveyance. In 2009 the city initiated a *Rooftops to Rivers* stormwater infrastructure project designed to provide a more comprehensive, integrated approach to citywide sustainability planning, with the 2006 *Rooftops to Rivers* publication serving as inspiration.[1] The city is developing a 20-year Combined Sewer Overflow Long-term Control Plan to address overflows. A draft of the plan, submitted to the Illinois EPA in 2010, identifies both green and conventional infrastructure approaches to stormwater control.[2] Most recently, Aurora alleviated the impacts of wet weather on its combined sewer system in three target areas by constructing 16,000 linear feet of storm sewer at a cost of $3.8 million.[3]

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Aurora used the 2006 *Rooftops to Rivers* report as a planning framework to bring together a range of plans and guidance documents that include land use controls and direction for the use of green infrastructure practices in recreational, development, redevelopment, and brownfield projects.

While Aurora occupies parts of four separate counties, the city adheres to Kane County's Stormwater Management Ordinance. Adopted in 2002, the Kane County ordinance includes volume control measures that require runoff from up to a 0.75-inch rainfall event to be stored or retained on-site. While the runoff volume can evapotranspirate or infiltrate into a subsurface drainage system, no direct positive connection to downstream areas is allowed. Green infrastructure practices such as leaving soils undisturbed during construction and maximizing vegetation, which promotes infiltration and evapotranspiration, and may be used in lieu of traditional detention practices for developments requiring less than 1 acre-foot of detention. The stormwater manual was modified in 2009 to allow the use of permeable pavements, rain gardens, infiltration trenches, level spreaders and filter strips, and naturalized stormwater basins.[4]

PLANNING

As mentioned earlier, Aurora used the 2006 *Rooftops to Rivers* report as a framework to bring together a range of plans and guidance documents that include land use controls and direction for the use of green infrastructure practices in recreational, development, redevelopment, and brownfields projects.[5] In 2010 Aurora also completed a Naturalized Stormwater Management Corridor Plan (NSMCP) to address the role of green infrastructure as a single sewer pipe is replaced with two pipes. While the separation will reduce CSO occurrences, it will also increase the amount of stormwater flowing into the Fox River. To counteract this, green infrastructure will be used to reduce pollution and stormwater volumes. The NSMCP identifies a system of interconnected green infrastructure corridors and addresses stormwater strategies at the neighborhood, block, and site levels.

WATER CONSERVATION

The Fox River, which runs through downtown Aurora, is a primary source of drinking water for Aurora and several nearby towns. The health of the river, which is on the EPA's list of impaired waters, is seen as critical not for just the revitalization of downtown Aurora but for the protection of drinking water for Aurora and communities downstream. Slowing flow and cleaning water prior to its reaching the stream also helps recharge groundwater, which is another source of drinking water for Aurora, and reduces treatment costs for the Aurora Water Treatment Plant. In light of this, in 2006 the city implemented a year-round water conservation ordinance and water conservation education program.[6] In addition, Mayor Tom Weisner recently helped form the NorthWest Water Planning Alliance, which consists of elected county and municipal leaders from 79 communities and five counties. Their mission is to work collaboratively to address regional water supply and groundwater recharge issues in an economically and environmentally sound manner.[7]

FINANCE STRATEGY

To finance the city's green infrastructure and stormwater management projects, Aurora relies on stormwater funds, bonds, loans, and grants. Sewer separation projects, budgeted at $4 million for 2011, are financed through the Water and Sewer Fund, which for 2011 is supported largely by a 2006 water revenue bond and interest-free loans from the Illinois EPA. Sewer separation work performed in 2010 was covered primarily through an American Recovery and Reinvestment Act grant and interest-free loans from the Illinois EPA.[8]

Aurora 's Stormwater Management Fee Fund is financed primarily through a $6.90 bimonthly charge to each residential and business water and sewer service account. Other sources of funding include loans from the Illinois EPA and grants through the Clean Water Act.[9] Over the past five years, the city has completed $68 million of transportation and utility projects (with $52 million from grant sources, some of which is specifically targeted for stormwater control).[10] As a result of the *Rooftops to Rivers* planning process, the city also identified and completed three green infrastructure demonstration projects and developed a stormwater tool kit with funding from a Clean Water Act grant through the state.

The city does not currently utilize many incentives to encourage the use of green infrastructure. In 2010 a green permit program was developed to encourage and recognize green building construction. Under the plan, points are awarded for site-development and land-use measures that reduce water consumption, such as floodplain conservation, the addition of conservation areas, and graywater collection.[11] As part of the 2006 water conservation ordinance, developers are also provided educational materials on water-efficient measures during the construction process, and past efforts have included the distribution of water conservation kits. In addition, as part of its partnership with the state of Illinois to provide up to $20 million in tax incentives and funding to help revitalize its downtown riverfront, the River Edge Redevelopment Initiative also allocates EPA grants in the amount of $2 million to help with environmental remediation.

*EMERALD CITY RATING SYSTEM

Each of the cities profiled in *Rooftops to Rivers II* is a leader in green infrastructure investment—rethinking the design of municipal services and infrastructure. These cities leverage funding in creative ways. They provide tools to residential and commercial land owners to retrofit private properties and realize the multiple benefits provided by green infrastructure. In short, they are changing how cities look and function.

NRDC's Emerald City Rating System identifies six actions cities should undertake to maximize their green infrastructure investment. Our metric does not directly compare one city to another, due to geographical, population, budgetary and other differences. Instead, it identifies the presence or absence of common factors of success that NRDC believes are essential elements of a robust green infrastructure commitment. Only one city profiled, Philadelphia, is undertaking each of the actions identified, although each city is undertaking at least one.

REFERENCES

1 Natural Resources Defense Council (2010). "Rooftops to Rivers Aurora: A Case Study in the Power of Green Infrastructure," prepared by J.B. Ferris and K. Hobbs, accessed at http://fwwa.org/custom-5/Aurora%20RooftopRiver.pdf

2 Eric Schoedy, P.E., City of Aurora, Engineering Division, personal communication, May 6, 2011.

3 City of Aurora Finance Department (2010). "Annual Budget for the Fiscal Year Beginning January 1, 2011", accessed at http://www.aurora-il.org/documents/finance/budget_2011.pdf.

4 Jaffe, M., et al. (June 24, 2010). "Using Green Infrastructure to Manage Urban Stormwater Quality: A Review of Selected Practices and State Programs," draft report to the Illinois Environmental Protection Agency, accessed at http://www.epa.state.il.us/green-infrastructure/docs/public-act-recommendations.pdf.

5 These include the 2009 Sustainability Plan, the 2007 RiverEdge Park Master Plan, the 2006 Seize the Future Master Plan, the 2000 Countryside Vision Plan, and various neighborhood master plans.

6 City of Aurora. "Water Conservation Ordinance." Accessed on Oct 27, 2011, www.aurora-il.org/development_services/publicworks/waterproduction/conservation.php.

7 Ellis, Josh (March 24, 2011). "2010 Census: Outer Suburbs Face Water Supply Challenges." Metropolitan Planning Council," accessed at www.metroplanning.org/news-events/blog-post/6128.

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9 City of Aurora Finance Department (2010). Annual Budget for the Fiscal Year Beginning January 1, 2011.

10 Weisner, T. (March 17, 2011). "State of City Address," accessed at http://www.aurora-il.org/mayorsoffice/state_of_city.php.

11 City of Aurora (2009). "Draft Voluntary Sustainability Thresholds for Participation in Aurora's Green Permit Program", accessed at www.aurora-il.org/documents/buildingpermits/green/COA%20Green%20Permit%20Checklist.pdf.