Recommended Local Government Actions

While the Great Lakes seem vast and indestructible, they are slowly being impaired by overuse and pollution. Many cities and towns in the Great Lakes region are running out of water and struggling to keep the water they do have clean. Beach closings and severe stormwater events are becoming more frequent.

On June 9–10, 2004, Mayor Richard M. Daley and the City of Chicago co-hosted the Confluence of Water, Society and Ecological Design conference with the University of Illinois at Urbana-Champaign to address these Great Lakes water challenges.

The purpose of the conference was to explore ways to keep the water and environment of the Great Lakes region clean and healthy for generations to come.

Participants included experts in sustainable urban design, policy analysis, water systems engineering, municipal government, and environmental rating systems.

Recommended Local Government Actions

The design and management of water systems have broad impacts on individuals, workplaces, and neighborhoods. This conference identified five primary recommendations for local government leadership. In addition, each section of the conference was devoted to identifying specific recommendations for sustainable water-system design and management improvements.

1. Establish a Web portal to serve as an information resource for ecological design in Great Lakes cities.

Local governments should collaborate with professional organizations, regional organizations, and universities to compile the rapidly growing evidence of successful water management and design case studies, standards, and specifications.

This information should be made readily accessible to developers, designers, and officials at a Web portal. Professional organizations representing architects, engineers, landscape architects, and planners should provide leadership in compiling case studies and design standards; monitoring the status of research and performance of demonstration projects; and maintaining the Web portal.

2. Adopt sound ecological design practices in urban water management.

Local governments should be early adopters of sound ecological design practices in urban water management that have been tested in previous research and demonstration projects. They should incorporate these practices in public projects and provide incentives for private implementation and public-private partnerships.

Recommended Local Government Actions

3. Link Water Planning and Design Ordinances.

Local governments should incorporate best practices in building and landscape codes, zoning ordinances, and permitting regulations to support the full range of sustainable water management techniques.

The water provisions in design ordinances should be coordinated with one another and with municipal water, sewer, and energy utility policies. Coordination should include incentives for innovative design and flexibility to meet permit requirements. Professional associations should collaborate with local governments to create guides and technical manuals that support these coordinated regulations.

4. Link ecological building decisions with regional environmental objectives.

Local governments should consider an "adaptive management" approach for testing how building and site permits contribute to aggregate watershed and lake basin benefits. Local governments should seek additional state and federal funding for these adaptive management experiments and consider pooling local resources for design, monitoring, and management of metropolitan water projects.

5. Emphasize ecological design in water education campaigns.

Local governments should initiate sustainable water management education campaigns targeting the public, professional organizations, government officials, and schools.

Professional and governmental education should be based on established accreditation programs, such as LEED. Ecological design of water systems should be mainstreamed in related education programs for regional land use, transportation, housing, and open space planning.

Public education campaigns should connect personal action with environmental change.

*LEED is the U.S. Green Building Council's Leadership in Energy and Environmental Design rating system, www.usgbc.org. LEED Accredited Professionals have an understanding of sustainable building and site principles and have demonstrated their knowledge of sustainable design through an exam.

I. A Vision for Great Lakes Cities

Visionary cities are cities that champion sustainable design practices. Visionary leaders explore new approaches to water conservation, treatment, and reuse. When sustainably designed water systems are effectively implemented, they help maintain a region's water supply, improve water quality, and reduce negative impacts of stormwater discharge and sewer overflows.

One important obstacle to implementing sustainably designed water systems is a gap between designers and policy makers. Each group relies on its own conceptual frameworks, terminology, regulations, case studies, and performance standards. What is needed is a common language and common understanding of the issues so that policy makers and designers can discuss and address critical problems jointly and constructively.

Session recommendations:

Local Government Leadership. Local governments should lead the effort to coordinate environmental design and water resource management. A coordinated approach brings together green building design, site design, open space planning, and infrastructure management to address water-related issues. It links water management with related land use planning and Smart Growth initiatives. It employs a combination of streamlined ordinances, best practices, regulatory flexibility, and incentives for experimenting with innovative approaches.

Water Education. Education is key in bridging the gaps between environmental design and metropolitan water policy. Education programs should connect policymakers, designers, and the public in new ways. They should highlight creative solutions to water problems from the level of individual households to watersheds, and they should document the economic and environmental benefits.

The Role of Design. Sustainable design focuses on discovering new economic and ecological benefits of innovative water management. To realize these benefits, local governments should require an integrated design process that brings together policymakers, developers, engineers, and designers at key stages in the design process. Project managers should provide incentives for collaboration among different fields of water expertise and for advancing best practices of water management. They should require an integrated design process that brings together policymakers, developers, engineers, and designers at key stages in the design process. Project managers should provide incentives for collaboration among different fields of water expertise and for advancing best practices of water management.

II. Linking Green Building and Sustainable Site Design

Green buildings and sustainably designed sites conserve water from the moment a raindrop touches them. Sustainable design practices conserve water, energy, and money by bringing together building design and site design into one comprehensive process. An important step in linking building design and site development is to implement LEED* water credits and water conservation ordinances.

Session recommendations:

Policy Coordination. Local governments should coordinate building codes, permits, landscape ordinances, and zoning policies to support sustainable water use and wastewater management.

Incentives to Conserve. Local governments should measure and reward indoor and outdoor water conservation by metering customers and providing incentives for efficient water use.

Water Credits for Design. Local governments should work with the U.S. Green Building Council to develop an improved system of "water credits" in the LEED rating system, encouraging designers and developers to implement sustainable water design.

Water Budgets. Project managers should establish a "water budget" for their projects. The water budget would show how water, wastewater, and energy conservation are connected in building and landscape systems.

Big-Picture Projects. Professional associations should work with local governments to reward contributions that individual projects make to broader environmental goals such as climate, energy, and biodiversity conservation.

III. Linking Sustainable Site Design and Green Infrastructure Planning

When sustainable water management is implemented at the site scale, it has direct implications for infrastructure. Sustainable water management has many benefits: it helps reduce the demand for water; it decreases the amount of stormwater that runs off buildings, streets, and other structures into sewers; it cuts the need to increase the capacity of water treatment systems; it limits the amount of pollutants in water and in the environment; and it reduces the costs of water treatment.

Green infrastructure includes constructed wetlands, waterfronts, riparian corridors, and aquifer storage. It brings the best of engineering, ecology, and design together to replicate the way nature cleans water. The results are enhanced recreational opportunities, better wildlife habitat, and cleaner water.

Session recommendations:

Infrastructure Benefits of Site Design. Local governments and scientific organizations should work together to monitor and report on the infrastructure benefits of green site design (e.g., reduced or deferred infrastructure costs). These benefits can then be used to publicize and secure financing for sustainable site design.

Institutional Coordination. Local governments and utilities should streamline interagency and interdepartmental cooperation on innovative water projects.

Exemplary Case Studies. Project managers should develop engaging descriptions of design projects that show the public, developers, and government officials the economic, functional, and aesthetic benefits of sustainable infrastructure.

Technical Standards and Specifications. Professional organizations should develop the next generation of design and engineering standards (LEED or similar) that link sustainable site design and infrastructure planning.

IV. Linking Green Infrastructure Planning and Integrated Watershed Management

Green infrastructure projects often transcend municipal boundaries, and they bring benefits to watersheds that go beyond benefits to individual projects. As best practices are implemented at the watershed scale, they should discourage conventional practices that have negative impacts.

Session recommendations:

Infrastructure Demonstration Projects. As in other areas of site design, local governments and regional institutions should develop demonstration projects to measure and monitor the effects of ecological design practices at the watershed scale. These projects can then serve as exemplary case studies for application in comparable areas.

Watershed Research. Regional institutions and scientific organizations should focus research on how decisions about infrastructure design affect watersheds.

Infrastructure Incentives. Local governments should encourage green infrastructure that has watershed benefits with financial incentives, grants, and publicity.

Watershed Organizations. Nonprofit organizations should help communities evaluate their watersheds by identifying models of healthy watersheds in the Great Lakes Basin and then working with those communities to develop benchmarks that the communities can use as they work to improve their local watersheds.

V. Toward Sustainable Metropolitan Water Systems in the Great Lakes Region

Urban land development on the Great Lakes coastline is proceeding at a pace that exceeds population growth. One consequence has been an increase in water demand and wastewater discharge. The reason: as houses are built and land is paved, less rainfall soaks into the ground and replenishes groundwater, which increases stormwater runoff into sewers. At the same time, larger and generally wealthier populations seek more water recreation and amenities. These challenges require a regional as well as local approach to water management.

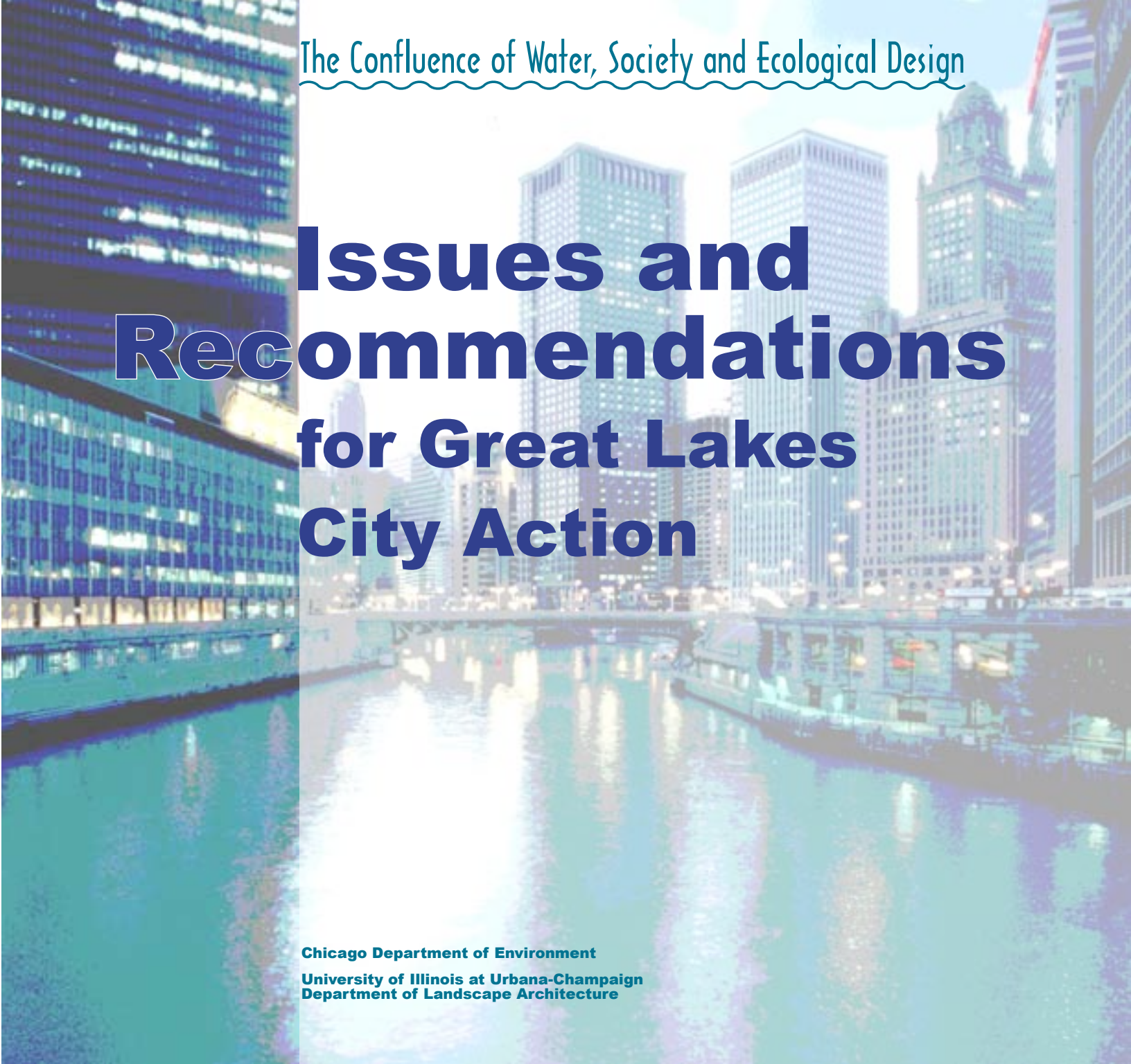
Session recommendations:

Sustainability Policies. Local governments and regional institutions should follow sustainable water management guidelines as they coordinate their policies with Great Lakes water quality and quantity agreements.

Best Practices and Technical Standards. Professional associations should identify design practices, standards, and specifications for sustainable water management in Great Lakes cities.

Information Clearinghouse. Local governments, professional associations, and regional institutions should collaborate on an information clearinghouse for "Water in Environmental Design." The clearinghouse might take the form of a Web portal with links to sites that provide information on case studies, design standards, continuing education, and technical publications. This clearinghouse would complement other regional institutions and services, such as the Great Lakes Cities Initiative and the Great Lakes Information Network.

Scaling-Up Local Programs for Regional Benefits. Local governments should secure support for water projects that contribute to broader Great Lakes ecosystem objectives (including water quality standards, Remedial Action Plans for Areas of Concern, and beach protection).



The Confluence of Water, Society and Ecological Design

Issues and Recommendations for Great Lakes City Action

Chicago Department of Environment

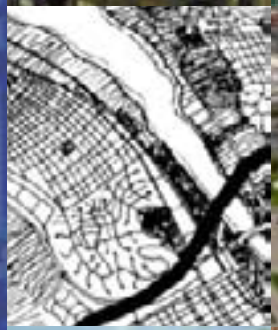
University of Illinois at Urbana-Champaign
Department of Landscape Architecture























Detention Area








PRECIPITATIO
EVAPORATION
INFILTRATIO


Related Resources

"A Guide to Stormwater Best Management Practices." City of Chicago, www.cityofchicago.org/environment.
"Best Management Practices Guidebook for Urban Development." Northeastern Illinois Planning Commission, 1997.
"Great Lakes Urban Water Internet Guide." (compiled by James Wescoat and Emily Hamilton).
"Great Lakes Cities Initiative." www.greatlakescities.org.
"Protecting Water Resources with Smart Growth." www.epa.gov/smartgrowth/water_resource.htm.
"River Rouge." www.riverrouge.com.
"United States Green Building Council." www.usgbc.org.
"Zoning for Environmental Sustainability." ideas@work, vol.3, number 1, Campaign for Sensible Growth, 2003.

For more information contact:

Chicago Department of Environment
30 North LaSalle, Suite 2500
Chicago, IL 60602
312-744-7606

University of Illinois at Urbana-Champaign
Department of Landscape Architecture
611 Taft Drive MC-620
Champaign, IL 61801
217-244-1700

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This document, a conference program, full session summaries, and additional related resources are available at www.cityofchicago.org/environment.