AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS

Testimony before the
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Committee on Transportation and Infrastructure
Subcommittee on Water Resources and the Environment
The Honorable Eddie Bernice Johnson, Chairwoman

Impact of Green Infrastructure and Low Impact Development
On the Nation's Water Quality and, Economy, and Communities

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By

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Good morning Chairwoman Johnson, Ranking Member Boozman and members of the Subcommittee on Water Resources and Environment. My name is David Yocca; I am a licensed landscape architect and certified planner, and one of three principal partners in Conservation Design Forum (CDF) located in Elmhurst, Illinois - a nationally-recognized planning, design, and engineering small business that assists communities, neighborhoods and individual residents in addressing a host of issues using integrated green infrastructure strategies. I am also part owner of an allied firm, Conservation Land Stewardship, which provides implementation and contracting services for ecological restoration and green infrastructure applications in the Midwest. Thank you for inviting me today to discuss some of my professional experiences with green infrastructure and its impact on water quality and economic opportunities. For over 20 years, I have worked on and promoted the use of green infrastructure techniques that promote economic, social and ecological sustainability.

Today, I am representing the American Society of Landscape Architects, of which I am a long-time member and was recently inducted into its Council of Fellows – the Society's highest honor. Also known as ASLA, the Society represents more than 16,000 members nationally, with local chapters in every state across the country. To become a landscape architect generally requires a four-year degree in landscape architecture, along with a rigorous testing and licensing process in each state. During our formal education and training, landscape architects are specifically trained in hydrology, grading, drainage and environmental sciences, which make us uniquely qualified to lead the process to identify and incorporate green infrastructure techniques that address stormwater management and other water quality issues in an integrated and sustainable manner into our neighborhoods and cities.

Greening of Chicago

It is widely known that the City of Chicago is currently one of the shining examples of how "greening" a city has yielded tremendous ecological and economic results. In the last decade, we have seen green infrastructure in Chicago expand dramatically, including approximately 7 million square feet of green roof space, several million square feet of porous pavement, 500,000 trees planted, and 280 miles of new median planters on parkways and neighborhood streets.[1] According to the City of Chicago's Department of Environment, this has resulted in a city with cooler ambient temperatures in summer months, reduced stormwater flows into an aging grey infrastructure system, the creation of new businesses to support this emerging green industry, increased tourism, and an overall more "livable city." My firms have worked closely with the City Department of the Environment, the Chicago Park District, and others as part of this greening effort over the past ten years.

Chicago City Hall Green Roof

More than a decade ago, I, along with my colleagues at Conservation Design Forum, led the design process to convert the Chicago City Hall rooftop into a green roof pilot project. CDF's scope for this unique project included design of the green roof system as well as grading and drainage design and plant selection. The project was a component of the Chicago Department of Environment's Urban Heat Island Initiative and was sponsored by the United States Environmental Protection Agency to study certain effects of green roof technologies.

Back in 1999, when we began construction of the City Hall green roof, there were no local contractors that had experience with green roofs, and only three green roof systems available to specify. Today, I

[1] United States Environmental Protection Agency, Smart Growth and Urban Heat Islands, accessed online September 25, 2010, (http://ideas.usda.gov/ago/ideas.nsf/0/2380D67EE371E126862577AB005404AF?OpenDocument).

work with over 2 dozen local, mostly small business, contractors and suppliers of green roof systems, components, materials, and plants. These companies make the green roof components, deliver the materials and install these complex green infrastructure systems, and then maintain the systems to ensure optimal performance. What we are seeing in Chicago is the creation of an industry that did not exist 10 years ago. We're not only creating sustainable buildings, alleys, streets, and neighborhoods; we are creating good paying sustainable local jobs that capitalize on the talents and expertise of local workers.

Several nationally-based green roof system suppliers are based in Chicago, and have been established in the decade since the Chicago City Hall green roof project. American Hydrotech is a Chicago-based roofing company that is also a leader in green roof systems. They have helped to promote and develop the green roof industry, and their products are now installed throughout the country. Tecta America, headquartered in Skokie, Illinois, also specializes in green roofs and is currently the largest union roofing contractor in the United States. The company started in 2000 – at the inception of the City's greening initiatives - with about 1,000 employees and now employs about 3,500 roofing professionals. [2] Midwest Trading, based in Virgil, outside of Chicago, now provides green roof media for numerous green roof projects regionally, as well as structure soil for green streetscapes.

Greencorps Chicago

Because of Chicago's success in developing a healthy green industry sector, there is a growing demand for green jobs. To help meet this demand, the City has created *Greencorps Chicago*, a job training program that provides diverse environmental trades training for some of the city's most economically-disadvantaged citizens. Participants are trained in environmental remediation, landscaping, maintenance and a host of other green jobs that are sorely needed throughout the city. Greencorps trainees have performed maintenance of green infrastructure and landscapes on many projects planned or designed by my company, including Chicago Park District projects, schools, restored native landscape systems, and green roofs, including the Chicago City Hall green roof.

Chicago River Master Plan

As part of its *Water Agenda*, the City of Chicago announced that "traditional engineering fixes are not enough to manage stormwater and protect water quality. A combination of upgrading our built infrastructure **and** creating a green infrastructure will demonstrate forward-thinking ways to reduce the burden on our sewer system and keep stormwater in the environment. "[3] So the city embarked on a major campaign to employ green infrastructure wherever feasible to help limit stormwater flowing into its combined sewer system. Restoring parks, wetlands, and woodlands is a major part of the strategy.

The Chicago Park District hired my firm to prepare the *Chicago River Master Plan: Connecting People to the River*," which helped to identify restoration projects for over 40,000 linear feet of the Chicago Shoreline. Along with being "sponges" for stormwater, these parks and open spaces also help to connect the people with Chicago's natural environment and provide unique recreational opportunities along the river. This project, together with numerous other green infrastructure strategies the City is employing, is helping Chicago to attain its goal of reducing stormwater runoff by up to fifty percent.

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[2] Stern, Cassandra and Schneider, Keith, "Greening Chicago One Roof at A Time," Apollo News Service, January 28, 2008. (http://apolloalliance.org/rebuild-america/signature-stories-energy-efficiency/greening-chicago-one-roof-at-a-time/).

[3] City of Chicago Office of Water, Chicago's Water Agenda 2003, p. 18, accessed online September 23, 2010 (http://www.cityofchicago.org/content/dam/city/depts/water/general/CmsrOffice/wtrAgenda/wateragenda_1.pdf).

Woodlawn Center South

Green infrastructure also plays a critical role in redevelopment efforts. Currently, my firm is engaged in the Woodlawn Center South project, an affordable housing preservation project in Chicago. Phase one of the project will construct two multi-family units that will anchor future development of the neighborhood. My firm joined the design team to provide integrated landscape and stormwater design services. Studies have shown that incorporating sufficient green space and green infrastructure can significantly increase real estate values of surrounding areas.[4]

Adding green space to the city has proven to be a smart approach to signify investment and pride in neighborhoods in Chicago. Developers hunting for the next up-and-coming neighborhood keep a close eye on investment in the City in the form of planters along boulevards, upgraded parks, and street beautification. [5] We've seen these small public investments leverage millions in private money, and a greener more sustainable Chicago to boot.

Iowa Green Streets Initiatives

Green infrastructure and low impact development approaches are equally effective in small towns. And during these economically trying times, small towns are particularly looking for innovative ways to spur economic growth and development. The Iowa Department of Economic Development (IDED) through its Green Communities Pilot Program offered grants and technical assistance to 2 pilot cities in Iowa - West Union and Woodbine.

Downtown West Union, Iowa

IDED and West Union called upon Conservation Design Forum to plan and implement the Iowa Green Streets Pilot Project, a community-wide sustainability initiative to serve as a catalyst for further investment in historic Downtown West Union. CDF designed and will help implement the complete renovation of 6 downtown blocks, replacing aging water, storm and sanitary sewer infrastructure. The project's integrated approach, which will serve as a model for other communities, showcases state-of-the-art sustainable design strategies including permeable pavers, rain gardens, energy efficient lighting, and a district-wide geothermal heating and cooling system. The project began with an initial community planning workshop in June 2008, where a series of sustainable strategies were proposed and evaluated within the context of West Union's long-term community vision.

We project that small businesses in West Union will benefit from lower electric bills, increased foot traffic from the sidewalk improvements, and West Union will continue to see interest from additional small businesses seeking to relocate to its downtown. National research backs up what the small businesses in West Union are telling us. Green streets are an important contributor to a positive downtown retail experience in large and small towns alike. In a survey, consumers claimed they were willing to pay 9 percent more in small cities and 12 percent more in large cities for equivalent goods and services in business districts having trees. Visitors also claim they will pay more to park on streets with trees[6].

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[4] Dixon, K. K., & K. L. Wolf, 2007, Benefits and Risks of Urban Roadside Landscapes: Finding a Livable, Balanced Response. Proceedings of the 3rd Urban Streets Symposium (June 24-27, 2007), Washington, DC, Transportation Research Board of the National Academies of Science.

[5] Loder, Angela, "Chicago's Green Renaissance," Greening the City.com, accessed September 25, 2010 (http://greeningthecity.wordpress.com/chicagos-green-renaissance/)

[6] Wolf, Kathy, *Trees Mean Business: City Trees and The Retail Streetscape*, Main Street News http://www.naturewithin.info/CityBiz/MainStreetNews_Aug09_Trees.pdf accessed online September 23, 2010

But the benefits of the green streets extend beyond curbside appeal. We anticipate significant heating and cooling cost savings, a drastic reduction in stormwater runoff, and increased real estate values in the surrounding areas. Further, the improvements to the local hydrology and water quality will also have a positive impact on Otter Creek, a destination trout stream for Midwest anglers, who spend their tourism dollars in West Union and the surrounding area. Currently, the stream must be re-stocked and is fished out in a few short weeks. By providing stable, healthy aquatic habitat, the stream will be able to support the reproduction of trout and other aquatic species once again.

Historic Charles City, Iowa

The downtown historic residential and business district of Charles City, Iowa like many large and small cities is facing crumbling infrastructure, including an aging stormwater system. Charles City retained CDF to develop a comprehensive plan to address their decaying streets and stormwater issues and evaluate the expected performance of the existing and proposed system.

In consultation with residents and the local government, we designed a permeable streets plan for a 16 block area of the city that features permeable paving, parkway bioretention, bioretention intersection narrowings, and infiltration beds. We modeled the hydrologic design to capture stormwater runoff from the streets, yards and alleys and provided for the complete infiltration of a 2-year storm event, and 90 percent retention of a 10-year storm event. We're about 90 percent complete on this project and we are already seeing virtually zero runoff, even in heavy rains. After implementing our integrated green strategies, a neighborhood susceptible to periodic localized flooding has seen no flooding.

Also, by improving the water quality through natural filtration we are helping to provide clean base flow to the Cedar River, where the city is also implementing a whitewater kayaking course through the removal of two dilapidated low-head dams in a location just south of Main Street. The City expects this added recreational feature will help draw additional visitors to shop and dine in the downtown district, and to enhance the image and desirability of Charles City as a livable community.

Iowa Green Streets Training Program

Because of the enthusiastic response to the West Union and Charles City projects, the Iowa Department of Economic Development has also retained CDF to consult with additional cities. Earlier this year, I delivered a webinar available state-wide, and subsequently visited 25 small town *Main Street* organizations to share preliminary training and technical advice on how to make their main streets green streets.

Detroit East Riverfront District Sustainable Redevelopment Guidelines

Finally, my firm, Conservation Design Forum, and landscape architects more broadly, help "cities in transition," plan for future sustainable development.

To improve water quality in the Detroit River, which was subject to wastewater contamination as the result of combined sewer overflows, the City of Detroit asked us to develop green urban design and redevelopment guidelines to be incorporated into the city's redevelopment plans. The Detroit East Riverfront plan is comprehensive; it recommends sustainable practices in urban design, pedestrian orientation, streets and surfaces, water management, landscapes, exterior lighting, materials, energy efficiency, and interior environments. If implemented as envisioned, this would create one of the first, and most visible, green urban districts in the nation.

Detroiters Working For Environmental Justice

CDF is also working with local organizations, including the Detroiters Working for Environmental Justice (DWEJ) to provide opportunities to retrain unemployed citizens in the construction, operations, and maintenance of green infrastructure. DWEJ is committed to using green jobs for long-term employment and quality-of-life solutions. Launched in 2007, the program has successfully placed over 90% of its graduates in green-related occupations. This training program serves the unemployed, underemployed, ex-offenders and college graduates. The green jobs placement ranges from geo-thermal driller assistants to construction laborers. DWEJ has partnered with a number of leading companies, including MASCO, and is supported by a broad base of foundations and agencies, including the Ford Foundation, the Kresge Foundation.

An essential aspect of green job training is the availability of actual, "in-the-ground" examples of the type of green systems that the training is about. The Detroit Sustainability Center will transform a vacant building and site in the Detroit area with leading-edge green practices, and provide classroom and demonstration space for people to see and work on a wide range of green practices, including green roofs, porous pavement, and bioretention systems. It will showcase the application of green systems that have been proven to be best adapted to Southeast Michigan's environmental conditions and business climate.

Many landscape architects and other design professionals see the retrofit of Detroit's infrastructure in a green, sustainable fashion as a critical link to local job creation, providing for daily needs, and its overall evolution to become a healthy, economically and technologically competitive city of the future.

Conclusions

There is great need throughout the country to update, repair, and replace our crumbling infrastructure. There is a great need to improve water quality, habitat, fisheries, and recreation space. And most important, there is a great need to re-employ Americans in valuable, meaningful work.

So why green infrastructure? Why Low Impact Design? Simply put, these are better performing, longer lasting and cost efficient resources that provide multiple benefits. Integrated green infrastructure combines leading-edge, living technology with local art, craft, and skill to help restore our neighborhoods and cities to be healthier, more beautiful, and ultimately more economically and ecologically sustainable over time.

Landscape architects and other design professionals have successfully incorporated green infrastructure solutions in our communities for many decades. As a profession, we stand ready to assist communities of all sizes in reaping the many benefits of green infrastructure.

I encourage the members of this Subcommittee and their staff to visit the green roof at ASLA's headquarters located at 636 Eye Street, NW. There you can see first-hand a local example of a successful green infrastructure project that is helping the District of Columbia address its combined sewer overflow problem, as well as cleaning the air and providing energy cost savings for our organization.

I thank you for the opportunity to testify in front of this Subcommittee and I especially want to thank Chairwoman Johnson for convening a hearing on this issue. I also want to thank Congressman Russ Carnahan, an honorary member of ASLA, for his work on this issue and to Congresswoman Donna Edwards from Maryland for taking a leadership role in highlighting varied ways that green infrastructure can help our communities. Thank you.