



# Green Infrastructure & Stormwater Management CASE STUDY

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## One Drop at a Time - The 168 Elm Ave. Pilot Project

**Location:** 168 Elm Ave., Elmhurst, IL

**Client:** Ben Rush

**Design Firm(s):** de la Fleur LLC

**Landscape architect/Project contact:** Marcus de la Fleur, ASLA

**Email:** [mdf@delafleur.com](mailto:mdf@delafleur.com)

**ASLA Chapter:** Illinois

### Project Specifications

**Project Description:** Ben Rush, the owner of this existing suburban property in Elmhurst, Illinois became interested in eliminating as much stormwater runoff as possible. He worked with his friend, landscape architect Marcus de la Fleur, to understand the benefits and necessity of sustainable landscape treatments. Both began to develop a retrofit vision for the 50 by 150 foot site. The integration of a green roof, rain barrels, rain gardens, porous pavement, gravel grass, a cistern and a bioswale significantly improved the stormwater performance of the property, increased the biodiversity of the site and serves as a show case and pilot project to the community.

#### Project Type:

Single family residential

A retrofit of an existing property

**Design features:** Bioretention facility, rain garden, bioswale, green roof, cistern, rain barrels, porous pavers, gravel grass (type of porous pavement, see also:

[http://www.delafleur.com/168\\_Elm/07\\_G\\_Grass\\_01.html](http://www.delafleur.com/168_Elm/07_G_Grass_01.html)).

**This project was designed to meet the following specific requirements or mandates:**

Developer/client preference, property owner interested in eliminating as much runoff as possible

**Impervious area managed:** less than 5,000 sq/ft

**Amount of existing green space/open space conserved or preserved for managing stormwater on site:** less than 5,000 sq/ft

**The regulatory environment and regulator was** indifferent to the project.

**Did the client request that other factors be considered, such as energy savings, usable green space, or property value enhancements?** The design was never based or compared to a control. However, because this is a rental property, it was important to the owner to allow for maximum program flexibility. This led to the preservation of a small turf grass area (for play and spill over space from the patio), small vegetable garden plots, and the gravel grass parking (used either as parking or as turf grass area). The owner believes that the landscape and site amenities may attract more desirable tenants.

### **Cost & Jobs Analysis**

**Estimated Cost of Stormwater Project:** <\$10,000 (Public funding: Local, \$7,500 grant from DuPage Community Foundation, administered by Conservation Research Institute)

**Related Information:** The green roof cost (design and construction) were \$7,500. Because the rest of the project was implemented steadily over a period of three years by the owner and tenant, total project cost (excluding the green roof) are estimated to be around \$2,500. The use of salvaged and recycled materials as well as heavy re-use and recycling of existing materials kept project cost down.

**Was a green vs. grey cost analysis performed?** No

#### **Cost impact of conserving green/open space to the overall costs of the site**

**design/development project:** Because this was a property with an existing 'status quo' landscape, site design/development was entirely by the choice of the property owner. He became to see the improvements as a long term investment.

We assume that the landscape improvements (preservation and expansion of the open space on this suburban lot) may provide cost benefit for the long-term, because it eliminated some of the systemic site problems, such as localized flooding, reoccurring muddy areas, crumbling paths and patios, etc.

#### **Cost impact of conserving green/open space for stormwater management over**

**traditional site design/site development approaches (grey infrastructure)?** Slightly reduced costs (1-9% savings). We assume that the landscape improvements (preservation and expansion of the open space on this suburban lot) may provide cost benefit for the long-term, because it eliminated some of the systemic site problems, such as localized flooding, reoccurring muddy areas, crumbling paths and patios, etc.

**Number of jobs created:** 0

**Job hours devoted to project:**

- Planning and Design: 40 hours (estimated)
- Construction: 250 hours (estimated)
- Annual Maintenance: up to 20 hours (estimated)
- Other: 2 hours for burn permit application and administration

**Performance Measures****Stormwater reduction performance analysis:**

Modeled surface runoff prior to sustainable improvements compared to modeled surface runoff after sustainable improvements based on 24-hour design storm (Rainfall Frequency Atlas of the Midwest, Bulletin 71, Midwestern Climate Center (MCC) Research Report 92-03)

- 2-year storm (3.04"/24h) - 1.11" runoff depth pre-improvement - 0.18" runoff depth post-improvement
- 10-year storm (4.47"/24h) - 2.16" runoff depth pre-improvement - 0.56" runoff depth post-improvement
- 50-year storm (6.46"/24h) - 3.80" runoff depth pre-improvement - 1.59" runoff depth post-improvement
- 100-year storm (7.58"/24h) - 4.76" runoff depth pre-improvement - 2.31" runoff depth post-improvement

See also: [http://www.delafleur.com/168\\_Elm/11\\_Runoff\\_01a.html](http://www.delafleur.com/168_Elm/11_Runoff_01a.html) Please note that the modeled numbers above do not correspond to field events. No obvious runoff was observed during a 6.63"/24h storm event on 09/13/2008. The rain garden was only filled by 1/3 of its total capacity and had no standing water two hours after the intense rainfall ceased.

**Community & economic benefits that have resulted from the project:** Because this was a one-of-a-kind landscape in the community, it rapidly generated interest. Ben and Marcus were invited to show the property on the Elmhurst garden walk. The project site was, for several years, part of the local Green Fest and has since hosted many other tours. It appears that the rather unusual landscape with its biodiversity is appreciated and respected by the local community. Ben and Marcus have had numerous press inquiries and noted a steady stream of regular drive-bys that followed the landscape development, in particular the green roof, throughout the season. Marcus frequently speaks about/presents the project at conferences and community meetings. Nearby neighbors have begun to adopt some native plantings, rain barrels and even small patches of porous pavement.

**Project Recognition**

2009 ASLA Professional Awards - Communications Category - Honor Award

### **Additional Information**

**Links to images:** [http://www.delafleur.com/168\\_Elm/general\\_gallery/index.html](http://www.delafleur.com/168_Elm/general_gallery/index.html)

Any additional project information can be found at:

[http://www.delafleur.com/168\\_Elm/index.htm](http://www.delafleur.com/168_Elm/index.htm)