



# Green Infrastructure & Stormwater Management CASE STUDY

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## Northern Kentucky Sanitation District No. 1 (SD1) & Public Service Park

**Location:** Fort Wright, KY

**Client:** Northern Kentucky Sanitation District

**Design Firm(s):** Human Nature, Inc.; Humpert Wolnitzek Architects; Woolpert; Thelen Associates; Lamson Design

**Landscape architect/Project contact:** David Whittaker, ASLA

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**ASLA Chapter:** Ohio



Photo: Human Nature, Inc.

### Project Specifications

**Project Description:** The campus of SD1 embodies the mission of this progressive public agency by creating a regional laboratory for sustainable stormwater management and site restoration. Public Service Park is dedicated to those who enhance Northern Kentucky's quality of life through public service. The park also serves as a place that could empower and educate the public and development community on the importance of protecting Northern Kentucky's waterways for future generations. Rather than designing a standard building on a conventional site, SD1 decided to create a multifaceted and multipurpose site design to demonstrate on-site examples of storm water best management practices (BMPs). Public Service Park elegantly integrates and links storm water management with education together through multiple storm

water BMPs, including a green roof, bioswale, wetland, retention basin, detention basin, permeable pavements, and a cistern.

Several hands-on demonstration features are used to educate and empower the public about the sensitive stewardship of water resources. SD1 offers tours to members of the Northern Kentucky community, developers, and students. Visitors to Public Service Park have included business professionals from Ukraine and a research group from China.

**Project Type:**

Institutional/education

A retrofit of an existing property

**Design features:** Bioretention facility, rain garden, bioswale, green roof, cistern, and porous pavers.

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

Local ordinance, developer/client preference

**Impervious area managed:** 1 acre to 5 acres

**Amount of existing green space/open space conserved or preserved for managing stormwater on site:** 1 acre to 5 acres

**The regulatory environment and regulator was** supportive of the project.

**Did the client request that other factors be considered, such as energy savings, usable green space, or property value enhancements?** Yes, SD1 wanted the park to be a demonstrative and educational area for sustainable storm water BMPs. Interpretive elements and walking trails were incorporated into Public Service Park to encourage visitors to tour the park and learn about storm water management.

**Cost & Jobs Analysis**

**Estimated Cost of Stormwater Project:** \$1,000,000-\$5,000,000 (Public funding: State, regional, local)

**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:** The construction of Public Service Park was incorporated into the expansion of SD1's main office. A majority of the park was built upon existing green space. BMPs incorporated into the park took the place of conventional site features such as additional impervious surfaces and standard detention basins. No additional costs were incurred for conserving green space. Additionally, many BMPs and green space onsite reduce the amount of storm water runoff produced which results in the need for less storm water infrastructure. Costs of Public Service Park's educational features such as a creek overlook were offset by the

educational opportunity the park provides to the Northern Kentucky community as well as the amenities the features provide to park visitors.

**Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)?** BMPs onsite reduce the amount of storm water runoff that is generated from the overall development. This reduces the amount of traditional storm water infrastructure that is needed to convey storm water runoff.

**Number of jobs created:** Unknown

**Job hours devoted to project:**

Planning and Design: 800

Construction: 300

Annual Maintenance: Not available

## Performance Measures

### Stormwater reduction performance analysis:

SD1 is continuing to monitor the effectiveness of the park BMPs. Water quality BMPs onsite manage the first one to one and one-half inches of rain that fall on the site. Monitoring data collected to date for some of the BMPs have shown significant reductions in storm water runoff. For example, SD1's green roof has shown over a 90 percent volume reduction in runoff generated from a half-inch of rainfall.

### Community & economic benefits that have resulted from the project:

Public Service Park provides the Northern Kentucky community an opportunity to learn about vital importance of storm water management. Over 2,000 elementary students tour the park on an annual basis as part of an Environmental Curriculum developed by SD1. The park also provides SD1 an opportunity to monitor and measure the effectiveness of various BMPs and provide real data to the development community for consideration when designing these BMPs as part of project sites.



## **Project Recognition**

Kentucky Chapter ASLA Award of Excellence; Green Roofs for Healthy Cities Award of Excellence for Extensive Institutional Roof

## **Additional Information**

**Links to images:** [http://humannature.cc/index.asp?page=sustain\\_sd1](http://humannature.cc/index.asp?page=sustain_sd1)

[http://humannature.cc/index.asp?page=greeninfrastructure\\_site\\_sd1\\_park](http://humannature.cc/index.asp?page=greeninfrastructure_site_sd1_park)