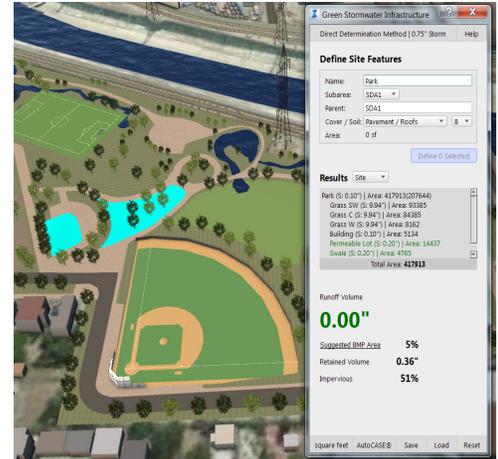


# Designing for water stewardship and resiliency

Designers and planners can win projects with new tools for green infrastructure design



## Highlights

- Context-sensitive 3D design capabilities
- Real-time, interactive analysis
- Extensibility from the site to district scale
- Six hydrologic methods to choose from
- LEED® benchmark module

## Benefits

- See your city and green infrastructure come to life in 3D
- Show proposed 3D design and performance metrics together
- Assess the financial, social, and environmental value with AutoCASE
- Optimize your green infrastructure and save money
- Evaluate both form *and* function, even in at the early design stages

## Step up to the water challenge with confidence

Managing storms is a top priority for urban areas today. Stormwater challenges include exploding population growth, rapid land development, unpredictable and extreme weather, crumbling stormwater infrastructure, and strict expectations for minimizing sewage overflows. In the U.S., an estimated 10 trillion gallons of untreated stormwater from developed areas inadvertently enters waterways and drinking water supplies each year,<sup>1</sup> causing human health risks and ecosystem degradation.

Recent studies<sup>2,3</sup> show that implementing green stormwater management techniques,<sup>4</sup> such as porous pavement and bioretention, is more cost-effective compared to traditional gray stormwater measures like pipes, sewers, and manholes. By making greater use of these techniques, communities can capture benefits from new recreational space, cleaner air and water, and property value increases up to 28 per cent.<sup>5,6</sup>

In the U.S., 9 of the 10 most populous cities have green infrastructure plans or ordinances, with cities like New York and Philadelphia allocating billions of dollars for improvements over the next two decades. Globally, the European Union, United Kingdom, and Australia all require green infrastructure. And in Asia, Singapore and various Chinese cities have committed to capturing a majority of their rainwater for local reuse. So, to stay competitive in today's infrastructure development market, planners and engineers must incorporate green stormwater strategies into their designs.

## Introducing GSI Extension for Autodesk InfraWorks 360

The Green Stormwater Infrastructure (GSI) Extension enables rapid design and real-time analysis of stormwater management projects in an interactive 3D environment. Planners can use it to determine the best way to implement green infrastructure at a neighborhood or district scale.

## Get in touch.

Contact your Autodesk sustainability team today at:  
[sustainability.solutions@autodesk.com](mailto:sustainability.solutions@autodesk.com)

GSI uses industry-standard hydrological models to estimate runoff volume and features tools to design and analyze ten types of green stormwater infrastructure, including:

- bioretention
- permeable pavement
- rainwater harvesting
- green roofs
- swales
- infiltration
- stormwater ponds
- trees
- wetlands
- proprietary practice

GSI also provides guidance for meeting LEED v4 (Rainwater management) and LEED 2009 (SSc6.1) certification credits.

This simulated infrastructure design in GSI meets stormwater requirements, sustainability credits and shows design integration with the existing landscape

## Who will benefit from using Green Stormwater?

- **Municipal planners** tasked with reducing the burden on their water system, reducing liability risk, addressing urban heat island effect, and attaining compliance with local regulations
- **A/E/C firms** looking to deliver final designs that cost clients less or those seeking to run quick analyses in order to respond competitively to RFPs
- **Developers and property owners** seeking to increase their asset's value, reduce building cooling costs, and/or achieve certification



## How it works

The process begins by modeling current site conditions and defining the local design storm to determine pre-development runoff volumes. As designers add green stormwater infrastructure features to the model, GSI returns instantaneous feedback on impacts like post-development runoff volume and impervious cover. Users can model and analyze multiple green stormwater infrastructure scenarios simultaneously until the project meets performance and aesthetic requirements.

Capitalizing on the visually informative Autodesk InfraWorks 360 platform, GSI enables advanced design, eliminates rework, and reduces project development costs.

## Stay ahead of the curve with GSI

Until now, designers and planners have seen only a handful of tools for green stormwater infrastructure design and these have been limited to 2D schematics and spreadsheets. There has been no practical means to *visualize and simulate* how design features fit within the landscape and perform under different storm conditions.

This lack of integration with design tools is inefficient and increases the risk for design errors. Autodesk GSI Extension for InfraWorks 360 delivers design, analysis, and sustainability guidance, all within a 3D information modeling environment that enhances communication among multi-disciplinary teams and stakeholders.

For more information about Autodesk Sustainability Solutions, contact: [sustainability.solutions@autodesk.com](mailto:sustainability.solutions@autodesk.com).

<sup>1</sup>Natural Resources Defense Council (2011) "Rooftop to Rivers II: Green Strategies for Controlling Stormwater and Combined Sewer Overflows".

<sup>2</sup>World Resources Institute (2012) "Insights from the field: Forests for Water", Southern Forests for future incentive series, Issue 9

<sup>3</sup>U.S. Environmental Protection Agency (2007) "Reducing Stormwater Costs through LID Strategies and Practices", Office of Water, Nonpoint Source Control Branch.

<sup>4</sup>In the US, they are known as "Low Impact Development Best Management Practices (BMPs)" in Europe as "Sustainable Urban Drainage Systems (SUDS), and in Australia as "Water-Sensitive Urban Design (WSUD)".

<sup>5</sup>North Carolina Cooperative Extension "Low Impact Development Economic Fact Sheet", Watershed Education for Communities and Officials

<sup>6</sup>U.S. Environmental Protection Agency (1995) "Economic Benefits of Run-off Controls", Office of Wetlands, Oceans and Watersheds