

Overview of Green Infrastructure

DESCRIPTION

WHAT IS GREEN INFRASTRUCTURE?

Green infrastructure (GI) refers to a decentralized network of site-specific stormwater management techniques that are implemented to reduce the volume of stormwater runoff entering the sewer system while also restoring the natural hydrologic cycle. As opposed to gray infrastructure—the traditional network of costly large scale conveyance and treatment systems—green infrastructure manages stormwater through a variety of small, cost-effective landscape features located on-site.

Green infrastructure is particularly important in urban areas with combined sewers, where during wet weather events, combined sewer overflows (CSOs) result in untreated combined sewage being discharged directly into water bodies. (See diagram on page 2). These CSO events can significantly impact downstream water quality. As cities are increasingly required by legislation to reduce the frequency and volume of CSO events, greater emphasis is being placed on implementing alternative ways of managing urban stormwater runoff using GI techniques.

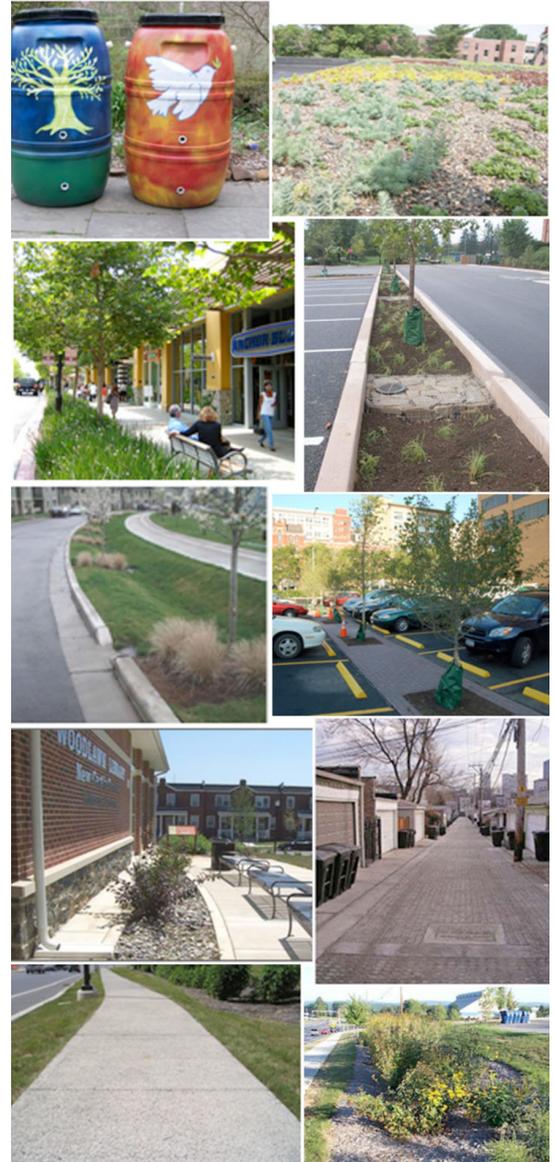
HOW DOES GREEN INFRASTRUCTURE WORK?

Green infrastructure employs the following processes to design a hydrologically functional site that mimics predevelopment conditions:

- Infiltration (allowing water to slowly sink into the soil)
- Evaporation/transpiration using native vegetation
- Rainwater capture and re-use (storing runoff to water plants, flush toilets, etc.)



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Examples of green infrastructure (GI) techniques

COMMON GREEN INFRASTRUCTURE TECHNIQUES

- Downspout Disconnection
- Cisterns / Rain Barrels
- Bioretention (Rain Gardens)
- Vegetated 'Green' Roofs
- Pervious Pavement
- Green Streets / Green Alleys
- Tree Trenches



Image Source: artfulrainwaterdesign.net

MAINTENANCE

Similar to conventional gray infrastructure, green infrastructure does require some level of maintenance to ensure optimal performance:

- Many GI techniques require regular maintenance, whether related to vegetation (weeding, pruning, mulching) or operational maintenance/repair (cleaning pervious pavement)
- The life cycle of the technology or vegetation used in the GI technique must be taken into account when preparing a maintenance plan

COST

- Costs for green infrastructure vary widely depending on specific site conditions and the type of GI techniques being used
- Often the cost of GI projects is competitive with or less than comparable gray infrastructure projects

BENEFITS

ENVIRONMENTAL BENEFITS

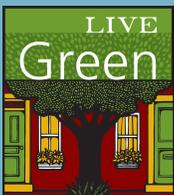
- Recharges and improves quality of ground and surface waters
- Provides natural stormwater management
- Improves energy efficiency
- Reduces urban heat island effect
- Improves aquatic and wildlife habitat

SOCIAL BENEFITS

- Improves aesthetics and livability of urban communities
- Increases recreational opportunities
- Improves water and air quality
- Fosters environmental education opportunities

ECONOMIC BENEFITS

- Reduces existing and potential future costs of gray infrastructure
- Increases property values
- Reduces energy consumption costs



For more information about the Green Infrastructure program please contact:

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