

Green Infrastructure in Austin, TX

Watershed Protection's Initiative
to Pursue a More Sustainable
Stormwater Future

Green Infrastructure Definition

- Green Infrastructure for stormwater management reduces impacts from the built environment using landscape features and engineered systems that mimic natural processes to:
 - Control the quantity and quality of runoff (Or in technical terms provide flow-rate attenuation, volume reduction, and water quality improvement).

Green Infrastructure Initiative

- Creation of Green Infrastructure Team
- COA sponsored green stormwater infrastructure
- Update Technical Manuals to provide guidance in using GI to meet WQ ordinance requirements
- Outreach to homeowners and schools

Green Infrastructure Team

- Horizontally-aligned, multi-disciplinary team across WPD with goal of investigating and implementing optimal use of green and decentralized stormwater management practices
- Begin to consider stormwater as a resource, rather than a waste product

Green Infrastructure Team

- Create common body of knowledge amongst various disciplines
- Identify knowledge gaps or impediments to increased use of GI
- Develop work plans with objectives, deliverables, deadlines.
- Areas of focus: Technology, Maintenance, Regulation, Education/Outreach
- Benchmarking each of these areas against other national leaders

Green Infrastructure Team

- Technology Focus: Determine the feasibility of using decentralized GI (cisterns, rain gardens, VFS, blue roofs) to reduce runoff volume to reduce local flooding and improve water quality
- Regulatory Focus: Use WPO process to include code/criteria updates to remove barriers/create incentives for GI in new and redevelopment scenarios. Summer 2012
- Maintenance Focus: Create SOP for O&M of GI
- Outreach Focus: Gauge public acceptance of GI and explore opportunities for design assistance from private sector through neighborhood partnering program (Jessica Wilson 974-2446)

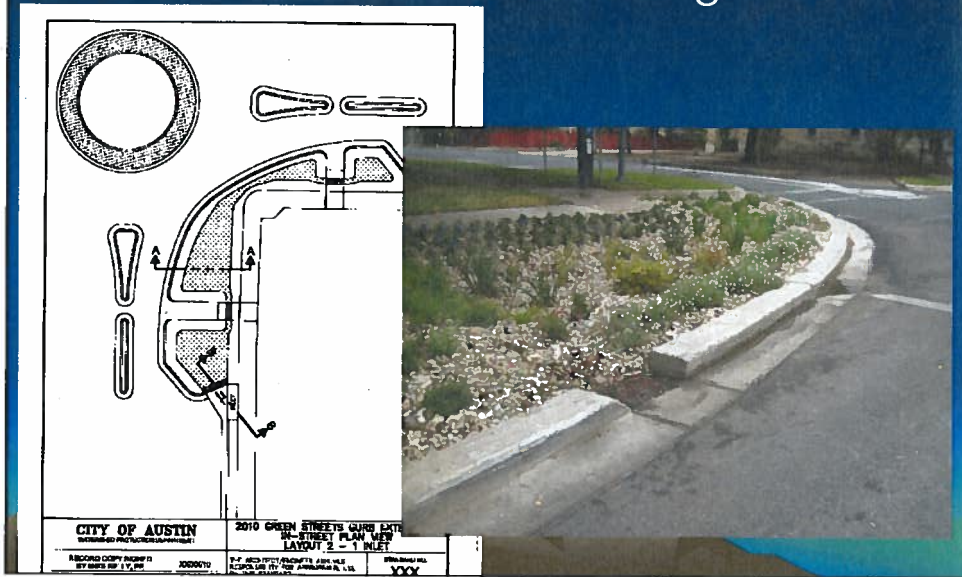
Current Initiatives Outside of GI Team

- City-Sponsored Retrofits
- Regulatory Design Criteria
- Homeowner Rain Garden Outreach

One Texas Center Rain Gardens



10th & Rio Grande Rain Gardens and Traffic Calming



2008-Austin Adopted Design Criteria for Green Infrastructure in New Developments

Approved Best Management Practices to Meet
COA Water Quality Regulations

(WQV=First 1/2 +, drawdown in 48 hours)

- Biofiltration
- Rain Gardens
- Vegetative Filter Strips (VFS)/ VFS – Disconnection of Imp. Cover
- Rainwater Harvesting
- Porous Pavement for Pedestrian Use



Sand Filtration vs. Bio Filtration



Addition of organic matter and native vegetation results in increased removal of dissolved nutrients



Rain Gardens



- Infiltration system for small (<1 acre) drainage areas
- Ponding depth < 6 inches
- Allows for dispersed, small-scale treatment systems integrated into site landscaping



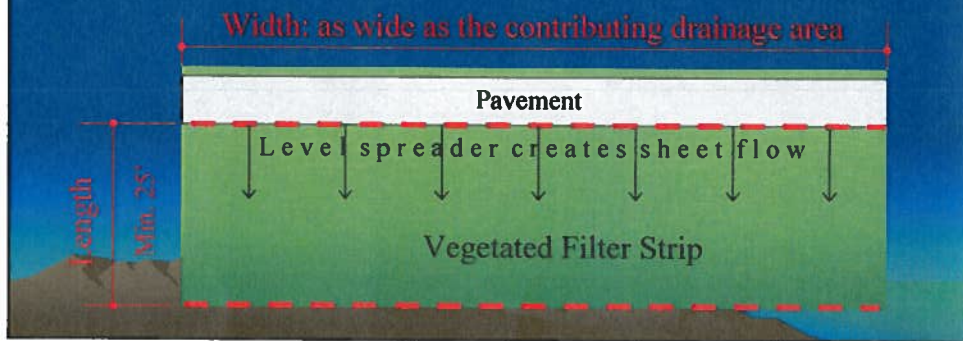
Vegetative Filter Strip Design

May be natural or engineered

Size: Requires relatively large land area

Maintain sheet flow

Do not exceed max. velocities/hydraulic loading rates (2fps/0.05 cfs/ft width)



Rainwater Harvesting

A photograph of several large, cylindrical rainwater harvesting tanks. Below the photograph is a plan view diagram of a rainwater harvesting system. The diagram shows a 'Gutter System' connected to a 'Conveyance System' (a circular pipe) which leads to a 'Flow Spreader'. The flow spreader is connected to a vegetative filter strip. Text in the diagram reads: 'Use Vegetative Filter Strip Criteria ECM 1.6.7B for design of this area'. The diagram is labeled 'Plan View'.

Porous Pavement for Pedestrian Use



Pervious Concrete



Permeable Pavers



Homeowner Rain Gardens

- Written Guides →
- Green Gardening Classes
- Demonstration Garden ↓



earth-wise guide to

Rain Gardens

Keeping Water on the Land

What is a rain garden?

A rain garden is a shallow, vegetated depression designed to absorb and filter runoff from hard (impervious) surfaces like roofs, sidewalks, and driveways. Rain gardens are usually planted with colorful native plants and grasses. They not only provide an attractive addition to the yard but also help to conserve water and protect our water quality.

How does a rain garden help?

As Austin becomes increasingly urbanized, native landscapes are replaced with impervious surfaces that prevent rainwater from soaking into the ground. Stormwater quickly runs off these hard surfaces, picking up any pollutants from the land and carrying them to our creeks. The rapidly flowing water also increases the chances of flooding and erosion. The goal of a rain garden is to keep water on the land. Rain gardens, with their shallow depressions, capture stormwater and provide for natural infiltration into the soil. This provides water for the plants and helps maintain a constant flow of water in our streams through groundwater. They also help filter out pollutants including fertilizers, pesticides, oil, heavy metals, and other chemicals that would otherwise reach our creeks through storm drains or drainage ditches. By reducing the quantity of water that runs off your property, rain gardens help lower the risk of flooding and erosion.

growgreen.org



Create A Rain Garden in Six Steps

1 Find the Right Location

- Observe the flow of water from rooftops, driveways or other hard surfaces and place the rain garden where this water collects.



- Select an area on gently sloping or flat land.
- Calculate the slope of your lawn (instructions on next page). Slope should be less than 10%.
- If possible, pick a spot in full to partial sun. Shady locations will still work, but the options for attractive plants are more limited in the shade.
- Make sure that any overflow does not cause unwanted runoff to a neighbor's property or other structure.
- If you are experiencing drainage-related problems (e.g. severe foundation problems, erosion or flooding), consider placing the rain garden at least 10' away from the structure.
- Avoid areas with utility lines. Be sure to call 1-800-CMG-TESS (344-6377) to identify the location of underground utilities - the service is free.