HOW LID IS CHANGING THE SAN ANTONIO LANDSCAPE

Importance of Sustainability to the San Antonio River Watershed

Development within the San Antonio River Watershed has modified the natural function of the watershed. Infrastructure has been built to direct stormwater runoff to creeks and rivers. The reduction of open space has removed the natural filtration benefits provided through vegetation. Data from San Antonio River Authority (SARA) water quality monitoring indicates that pollutants carried by runoff are the greatest threat to stream health. During storm events, rainwater runoff picks up bacteria, oils, hydrocarbons, sediment, fertilizers and other contaminants from yards, fields, sidewalks, parking lots and streets. In less developed areas, the runoff may be filtered of pollutants as the rainwater flows over land directly to a creek or river; however, in more urbanized areas, runoff is usually directed toward storm drains that carry unfiltered stormwater to local creeks or rivers. This is especially problematic in urban areas during small rain events, where the high concentration of "first flush" pollutants can reduce the stream's dissolved oxygen, resulting in fish kills and building concentrations of other containments in sediment. Ensuring the sustainability of our rivers and creeks and the bays and estuaries into which they flow involves reducing direct runoff and capitalizing on the land's natural ability to filter pollutants. Sustainable projects are optimized through balancing economic, environmental and quality of life components. A balance among these factors is best achieved if multidiscipline teams, including the landscape architect, incorporate sustainable land-use best management practices into initial site selection, project planning, and lifecycle operations and maintenance planning.

ENVIRONMENTAL

A sustainability outlook recognizes the value of environmental quality. Green and pervious spaces create a cleaner and healthier environment for people (which is also a quality of life benefit), reduce stormwater volumes and velocities, filter pollutants in stormwater and reduce the need for traditional infrastructure. Implementing LID best management practices (BMPs) can promote on-site water retention, decrease erosion of land and reduce maintenance.

ECONOMIC

Taking a sustainability approach balances immediate costs with long-term costs. It factors in front end costs of design and construction with operations and maintenance requirements, durability and impact from stricter regulatory standards.

QUALITY OF LIFE

Quality of life is generally considered to be the quality of jobs, education, health, safety, recreation and social interaction possible in a community. Sustainable projects promote land conservation, ecosystem restoration, flood protection, outdoor learning, walking trails, recreation and celebration of history and culture as investments in a community's quality of life.

How Low Impact Development is Changing the San Antonio Landscape

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Low Impact Development Techniques for Infrastructure Projects

1 PLANTER BOXES

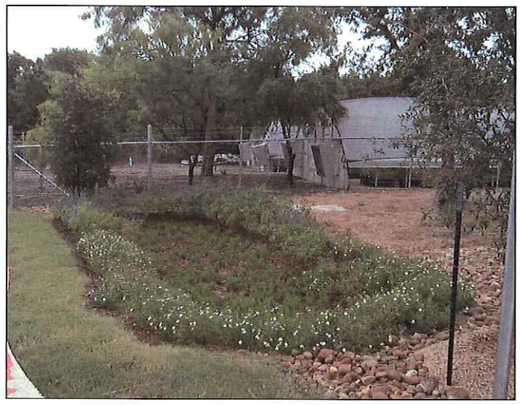
DESCRIPTION: Planter boxes are small bioretention areas that can be effective at controlling runoff, especially when distributed throughout the site. Runoff is directed to the planter box, where it is cleaned by vegetation and soil before entering a catch basin. The system consists of a container filled with a soil mixture, a mulch layer, under-drain system and a tree or shrub. Stormwater runoff drains directly from impervious surfaces through a filter media. They can fit into any landscape scheme, even highly urbanized areas.

2 BIOSWALES

Source: http://www.chron.com/news/houston-texas/article/Roadwork-going-green-Some-say-lack-of-rules-3798540.php

DESCRIPTION: Bioswales are stormwater runoff conveyance systems that treat stormwater and improve water quality. They can absorb low flows or carry runoff from heavy rains. Bioswales improve water quality by infiltrating the first flush of stormwater runoff and filtering the large storm flows they convey.

3 RAIN GARDEN



DESCRIPTION: A rain garden is a form of bioretention designed to have aesthetic appeal as well as a stormwater function. Rain gardens are commonly a depressed landscaped basin where runoff from roofs or paving infiltrates into the soil.

4 PERMEABLE PAVEMENT

DESCRIPTION: Permeable pavement has small voids or aggregate-filled joints that allow water to drain through to a gravel layer. Permeable pavement is a highly versatile stormwater BMP because it can effectively reduce pollutants and can be integrated into site plans with various configurations and components. Permeable pavement allows streets, parking lots, sidewalks, and other typically impervious covers to infiltrate while maintaining the structural and functional features of the materials they replace.

Low Impact Development (LID)

What is Low Impact Development?

Low Impact Development (LID) is a sustainable land planning and engineering design approach to managing stormwater runoff as close as possible to the source.

How does LID work?

LID works first with appropriate site planning and then by directing stormwater towards small-scale systems that are dispersed throughout the site with the purpose of managing water in a distributed manner.

Won't my costs go up if I implement LID?

Developers and builders can often save money or be cost neutral plus reduce environmental impacts in a practical manner utilizing LID techniques and practices. When implemented into initial site-planning and design, these distributed systems allow for elimination or downsizing of stormwater detention ponds, curbs and gutters and other traditional infrastructure, which offsets the cost of LID-specific design features.

Is LID a one-size-fits-all process? What about my community?

Because LID embraces a variety of useful techniques for controlling runoff, designs can be customized according to local management requirements and site constraints.

What are different LID techniques that are being used today?

Examples of LID techniques include bioretention, bioswales, permeable pavements, planter boxes, vegetated filter strips, green roofs, and rainwater harvesting.