

Introduction to Low Impact Development, Green Infrastructure, and the Technical Assistance Program

What is this Technical Assistance Program About?

The Goal

This program is designed to provide free technical assistance to communities in the Central Massachusetts Regional Planning Commission (CMRPC) service area located within the Blackstone watershed to support growth and economic development in ways that protect local and regional waterways from harmful pollutants and nutrients from stormwater runoff, reduce flood risks, and minimize local infrastructure and regulatory compliance costs.

Bylaw/Regulations Updates and Mapping

This technical assistance program is being offered to assist communities in planning strategically to incorporate best management practices related to stormwater into their local bylaws or regulations. We will provide Geographic Information Systems (GIS) mapping of natural green infrastructure that already exists in the community in order to understand its benefits in relation to water resources and impervious surfaces. Maps will also display the protection of that natural green infrastructure in the bigger picture of priority protection and development areas, protected open space, and local zoning.

Specialized Assistance

Communities may choose a technical assistance option that fits best with local interests and issues. Options include open space protection within development, low impact development, green infrastructure, or understanding stormwater management financing. The program can tie in with what you are currently doing, and be tailored to meet your community's needs.

What is Low Impact Development?

Green infrastructure incorporates natural features such as floodplains, forests, wetlands, and buffer areas. Green infrastructure also refers to a designed landscape that puts natural systems to work like soil and vegetation and mimics those natural processes.

Low Impact Development (LID) is a category of green infrastructure that works with nature to manage stormwater and decrease the impact of development on surface and groundwater. The EPA defines LID as “an approach to land development (or re-development) that works with nature to manage



This project was funded by an agreement (CE96184201) awarded by the Environmental Protection Agency to the New England Interstate Water Pollution Control Commission on behalf of the Narragansett Bay Estuary Program.



stormwater as close to its source as possible. LID employs principles such as preserving and recreating natural landscape features, minimizing effective imperviousness to create functional and appealing site drainage that treat stormwater as a resource rather than a waste product.”¹

Green infrastructure and LID techniques include:

- Land use planning and regulation to reduce sprawl and conserve and develop in appropriate areas;
- Incorporation of best management practices (BMPs) in stormwater management;
- Development and redevelopment projects to reduce impervious and increase infiltration;
- Infrastructure improvements such as green street design and stormwater curb bump outs; or
- Tree planting, rain gardens, green roofs, bioswales, rain barrels, constructed wetlands, etc.

Benefits: Both Financial and Ecological

Benefits of constructed green infrastructure and LID mimic many of the natural benefits identified below as well as others, including cost savings by reducing the need for expensive grey infrastructure² and maintenance as well as reduced energy costs by providing shade and windblocks. It brings increased public safety by reducing flooding, improving water quality, increasing a community’s climate change resilience, and reducing the urban heat island effect. The benefits of LID and green infrastructure also extend to improving the quality of life by offering protection of natural features and improved aesthetics, increased property values for homeowners and businesses, and assists communities working to meet regulatory requirements.

Natural green infrastructure absorbs rainfall and recharges local water supplies, filters water and cleans air, prevents flooding, offers shade and wind blocking, provides carbon storage and wildlife habitat, , and supports numerous recreational activities.

Stormwater Management

Stormwater management is becoming increasingly important, especially as heavy precipitation events increase flooding and communities are facing high costs of water quality regulations.

Polluted water from roads and parking lots gets washed into streams and ponds, and municipalities on tight budgets are facing millions of dollars in stormwater improvements. The commonwealth estimates

¹ <http://water.epa.gov/polwaste/green>

² Grey infrastructure is defined as “conventional piped drainage and water treatment systems (ie. pipes, tanks, conventional treatment systems including energy-intensive water treatment systems and processes such as membranes and reverse osmosis).” - <http://www.engineeringnaturesway.co.uk/2011/blue-green-and-grey-infrastructure-what%E2%80%99s-the-difference-%E2%80%93-and-where-do-they-overlap/>

that we will require an \$18 billion investment in stormwater management over the next 20 years³. Poorly managed stormwater can create serious issues, including:

- Pollution, including nutrients, bacteria, chemicals
- Erosion and sedimentation
- Loss of stream habitat
- Flooding, leading to culvert and road failure
- Loss of recharge to aquifers, leading to dried up streams

It's a Local Issue

The Blackstone River watershed, which spans 545 square miles and encompasses thousands of acres of waterways, is heavily impacted by this problem. Between 2005 and 2013, 1,500 acres of land was developed, and we need to continue to provide for jobs and housing while protecting the local quality of life.⁴ Nonpoint source pollution comprises a significant portion of the phosphorus loading in the Blackstone River, of which stormwater runoff is a major contributor. As forests and farmlands - which act as natural water filtration systems – are paved over, the problem grows. According to weather records, the Northeast has experienced a 71% increase in very heavy precipitation events from 1958 to 2012, which is expected to continue throughout the century.⁵

Who We Are and What We're Doing

Responsible, attractive, cost-effective development and stormwater management can occur together – if done in a sustainable way. CMRPC, Mass Audubon, Horsley Witten Group, and Blackstone River Coalition are working together within the watershed to find cost-effective stormwater solutions, with a focus on LID, which works with nature rather than against it. Through mapping of existing green infrastructure, impervious surfaces, regional protection and development areas, and more, this technical assistance program will allow us to work with local communities to plan strategically for their stormwater management and new development and incorporate best management practices into their local bylaws or regulations.

³ http://www.senatoreldridge.com/wp-content/uploads/2010/11/WIFC_ExSum.pdf

⁴ <http://www.massaudubon.org/our-conservation-work/education-community-outreach/sustainable-planning-development/losing-ground-report>

⁵ <http://www.globalchange.gov/browse/multimedia/observed-change-very-heavy-precipitation-0>