



Conceptual Green Infrastructure Design and Community Engagement in Gary, Indiana

GARY, INDIANA

Project Summary

The City of Gary is situated on the shores of Lake Michigan adjacent to the Indiana Dunes National Lakeshore. It has a population of approximately 80,000 and is located on the eastern portion of the Chicago metropolitan area in Lake County, Indiana. Like in many post-industrial cities, members of Gary's community are engaged with addressing vacant and blighted properties. More than one third of properties are considered blighted,¹ which provides opportunities to redefine land uses within the city. One of the many considerations is how stormwater management can be incorporated into the overall planning for vacant property and changing land uses. The Gary Department of Green Urbanism and Stormwater is one of the entities investigating the concept of

concurrently managing stormwater, removing blight, creating sustainable growth, and greening the city. To help further this concept, the City of Gary applied for and received U.S. Environmental Protection Agency (EPA) Technical Assistance, which aims to support the expanded use of green infrastructure. With technical assistance, the City of Gary sought to develop strategies to reduce stormwater to their overwhelmed combined sewer system through green infrastructure incorporated into streets and vacant parcels. Additionally, it was important to draw in the public to gain support for green infrastructure and help develop the program.

As a result of the technical assistance provided by EPA, a set of tools was

developed for the City of Gary to engage community members in understanding, and subsequently planning for, green infrastructure throughout the city. The tools include a Community Engagement Framework for the green infrastructure initiative and design concepts for the green retrofit of two key streets (i.e. Lake Street and Aetna Street). The Community Engagement Framework is provided as a report, and the design concepts are provided through a PowerPoint presentation and a handout that can be adapted by other communities as green infrastructure support. [These materials](#) will assist the City of Gary, and potentially other communities, in green infrastructure outreach and implementation pursuits.

¹ Bentley, Chris. "How Gary, Indiana, Got Serious About Tackling Blight." From the Atlantic: Citylab. February 26, 2015. Last Accessed on July 2, 2015. <http://www.citylab.com/politics/2015/02/how-gary-indiana-got-serious-about-tackling-blight/386159/>

Outreach Tools for the City of Gary

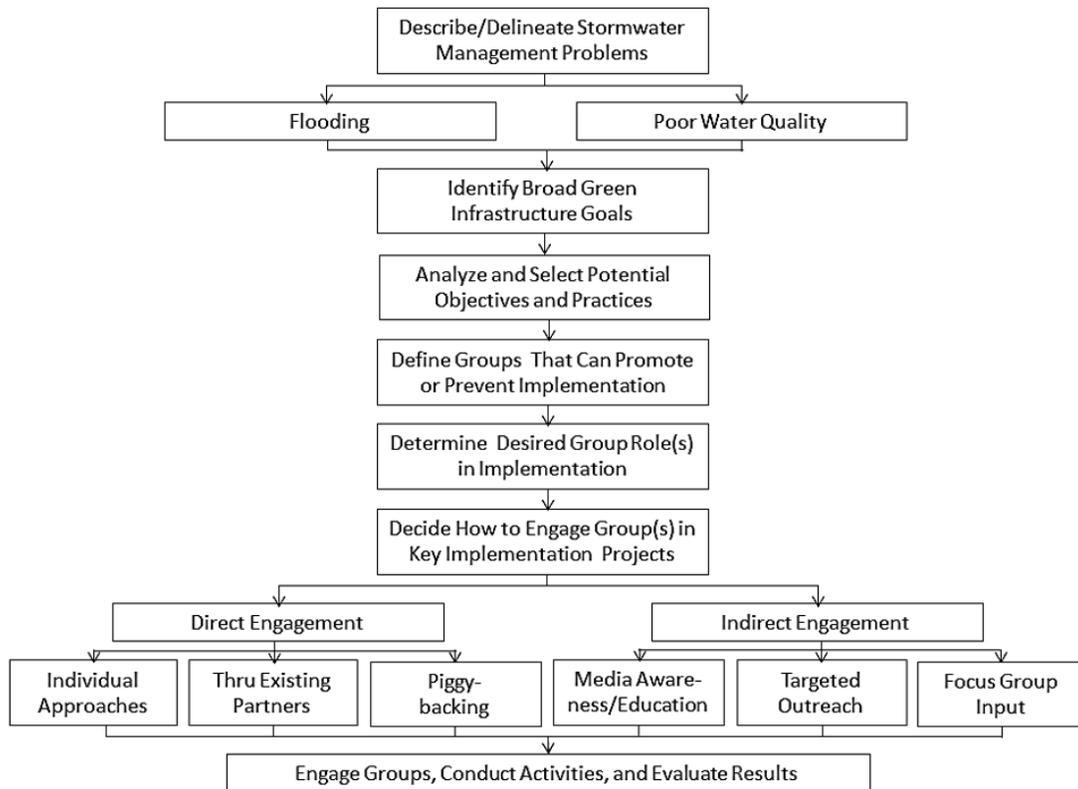
Community Engagement Framework

The [Community Engagement Framework](#) document proposes a community engagement plan built around educational activities and on-the-ground green infrastructure projects. The approach includes defining

green infrastructure goals and objectives, identifying individuals and groups who can help or hinder the program, determining stakeholder roles, and proceeding with stakeholder engagement. Engagement strategies range from direct approaches, such as working with existing partners and piggybacking, to indirect approaches,

such as engagement through the media, focus groups, and other venues. Engaging and involving stakeholders and community organizations in a structured program to promote and implement green infrastructure offers an approach for leveraging resources effectively and efficiently.

Community Engagement Process for Urban Stormwater Programs



Following this process fosters a high level of community engagement throughout planning and implementing green infrastructure solutions.

Outreach Tools for the City of Gary

Green Infrastructure Design Concepts on Lake Street and Aetna Street

A site visit and follow-up green infrastructure opportunity analysis were completed on Aetna Street from US-12 to E 15th Avenue and on Lake Street from Juniper Avenue to E 13th Avenue. The primary hydrologic goal of including green infrastructure along these corridors is to remove stormwater volume from the existing combined sewer system to decrease combined sewer overflows and basement backups. To maximize the reduction of stormwater runoff, green infrastructure opportunities were conceptualized to the maximum extent within the available right-of-way space and in vacant parcels along Aetna Street and Lake Street. The locations and practice types were further refined following a public review meeting on October 14, 2014.

Drainage areas along these corridors were delineated and runoff volumes estimated using discrete storm events and approximately 30 years of daily rainfall record based on NRCS curve number hydrology calculations. Detailed information on the NRCS Curve Number approach is available in the NRCS Part 630 National Engineering Handbook. Soil information was provided by the city; soils in the project areas are predominately Hydrologic Soil Group A soils, meaning that a high rate of infiltration can be assumed for the runoff and green infrastructure practice sizing calculations. Rainfall data are based on the Gary, Indiana NOAA National Weather Service monitoring site. Precipitation frequency data are based on NOAA Atlas 14 dataset. Conceptual-level unit costs were applied to the green infrastructure concepts using Midwest bid prices and then adjusted to current Gary construction dollars. The concepts and unit costs

applied on Aetna Street and Lake Street can serve as a template to be applied to other streets within the city.

To engage the community in planning for green infrastructure along these street corridors, as well as in other locations around the city, tools for the City of Gary included a presentation and handout. The materials are intended for a non-technical audience, including the general public, city staff, and public officials. The presentation and handout provide a brief introduction of stormwater management approaches and specific green infrastructure practices before describing the Aetna Street and Lake Street concepts. Design illustrations were developed for several different types of practices along Aetna Street and Lake Street allowing the audience to visualize what these projects might look like upon completion.



Example design for a typical rain garden.



Rendering of Lake Street with bioretention and curb cuts.

About the Green Infrastructure Technical Assistance Program

Stormwater runoff is a major cause of water pollution in urban areas. When rain falls in undeveloped areas, soil and plants absorb and filter the water. When rain falls on our roofs, streets, and parking lots, however, the water cannot soak into the ground. In most urban areas, stormwater is drained through engineered collection systems and discharged into nearby water bodies. The stormwater carries trash, bacteria, heavy metals, and other pollutants from the urban landscape, polluting the receiving waters. Higher flows also can cause erosion and flooding in urban streams, damaging habitat, property, and infrastructure.

Green infrastructure uses vegetation, soils, and natural processes to manage water and create healthier urban environments. At the scale of a city or county, *green infrastructure* refers to the patchwork of natural areas that provides habitat, flood protection, cleaner air, and cleaner water. At the scale of a neighborhood or site, *green infrastructure* refers to stormwater management systems that mimic nature by soaking up and storing water. These neighborhood or site-scale green infrastructure approaches are often referred to as *low impact development*.

The U.S. Environmental Protection Agency (EPA) encourages using green infrastructure to help manage

stormwater runoff. In April 2011 EPA renewed its commitment to green infrastructure with the release of the *Strategic Agenda to Protect Waters and Build More Livable Communities through Green Infrastructure*. The agenda identifies technical assistance as a key activity that EPA will pursue to accelerate the implementation of green infrastructure. In October 2013 EPA released a new Strategic Agenda renewing the Agency's support for green infrastructure and outlining the actions the Agency intends to take to promote its effective implementation. The agenda is the product of a cross-EPA effort and builds upon both the 2011 Strategic Agenda and the 2008 Action Strategy.

EPA is continuing to provide technical assistance to communities working to overcome common barriers to green infrastructure. Selected communities received assistance with a range of projects aimed at addressing common barriers to green infrastructure, including code review, green infrastructure design, and cost-benefit assessments.

For more information, visit www.epa.gov/greeninfrastructure.



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