

Green Infrastructure Planning and Capacity Development

Final Report

December 2011

Prepared by the Hudson Valley Regional Council

For the New York State Department of Environmental Conservation

American Recovery and Reinvestment Act (ARRA) Clean Water Act Section 604(b)



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Project/Organization Information

Project Information			
Project Name	Green Infrastructure Planning and Capacity Development		
Primary Project Type	Green Infrastructure Planning		
State Contract Number	C304261		
Project Start Date	10/22/2009	Project End Date	12/30/2011
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Introduction

Project Introduction & Description

The primary purpose of the project should be described, along with a general overview of major project goals and outcomes. Affected bodies of water and project locations should also be noted.

Abstract

The Green Infrastructure Planning and Capacity Development project was designed to produce 70 green infrastructure (GI) concept plans in participating communities and watersheds in the mid-Hudson region. The process included initial orientation and training for project staff who were designated as community outreach leaders, outreach to recruit interested stakeholders in each community, and a collaborative process to identify promising sites for development of GI concept plans with the input and participation of local leaders and citizens. More than 70 GI concept plans were developed and completed, all focusing on GI practices for runoff reduction, stormwater management and water quality protection and restoration. These plans represent a broad array of GI practices and planning strategies, many of them on sites owned by municipalities and non-profit organizations and several on private properties. The project also included some related educational training and outreach activities, including a webinar and training workshop about the Low Impact Development Rapid Assessment model for GI planning in combined sewer overflow (CSO) watersheds and other urbanized areas, and a number of presentations at conferences and workshops in the region.

Project Goals and Outcomes

This project's goals include: 1) involving community members in learning about the benefits of GI for runoff reduction, water quality and other priorities, and about issues involved with implementing and maintaining GI; 2) development of GI concept plans to demonstrate what is possible at a range of existing sites; and 3) using this process and related education and training to increase the knowledge and capacity of municipalities and organizations in the region to facilitate implementation of GI over time. Based on initial expressions of interest and support, participating municipalities were selected in seven places, each of which primarily includes one or several watersheds: 1) Fall Kill Creek basin -- City of Poughkeepsie and Town of Hyde Park; 2) Fishkill Creek basin -- City of Beacon and Town of Fishkill; 3) Quassaic Creek basin -- City and Town of Newburgh; 4) Wallkill River and Greenwood Lake basins -- Town and Village of Warwick and the Village of Greenwood Lake; 5) Sawmill River basin -- City of Yonkers; 6) Rondout Creek basin -- City of Kingston; 7) Croton River, Ten Mile River and Fishkill Creek basins -- Town and Village of Pawling. Watershed plans or related initiatives are completed or underway in all of these places and this GI planning process included working with leaders of those efforts to coordinate with local watershed projects and programs. Five of these places (the cities along the Hudson River) have significant wastewater overflow problems and GI implementation in these communities is expected to be a significant element of a long term plan to remediate these issues. Parts of the two other participating communities -- the portion of Pawling in the Croton basin, and Greenwood Lake -- are in watersheds where phosphorus is causing water quality impairment and the municipalities are required to implement mitigation measures, and GI retrofits will be an important component of restoration programs.

The primary outcome for this project was the completed GI concept plans and increased knowledge and literacy about GI among local stakeholders and organizations working with them on watershed planning and restoration in the region. Specific GI plans and projects that have been implemented or are moving forward as a result of this project include:

- A rain garden was completed in 2011 at the Ulster County Department of the Environment office in downtown Kingston (adjacent to the county office building), based on a plan developed in this project. A brochure and news article with video about this project, and other educational information, are available at <http://www.co.ulster.ny.us/environment/pollution.html>.
- The Kingston Library is finalizing plans to re-pave the parking lot, and based on a plan developed through HVRC GI planning project, the project will include infiltration trenches, a rain garden and preservation of existing trees as much as possible. The Library used the GI plan in a successful grant application for funding from the NY State Public Library Construction Grant and they expect to go to bid in early 2012.
- A dental office in Kingston is planning to include a bioretention garden in a renovation project scheduled to be built in the spring of 2012.
- A riparian buffer restoration project was completed at Murrow Park in the Town of Pawling in December 2011 with resources from the NYS DEC Hudson River Estuary Program Trees for Tribes program. At Lakeside Park, also in the Town of Pawling, the Highway Superintendent has implemented a curb cut and a rock-lined swale, based on working with the regional GI

planning project.

- The Assistant Superintendent of Schools for the Hyde Park Central School District is pursuing implementation of a rain garden plan in Hyde Park, at the North Park Elementary School in 2012, potentially with funding from the district's budget.
- The Newburgh Armory Unity Center, a non-profit community organization that serves inner city youth with athletic and educational programs, has included GI practices in their master plan based on work done through HVRC's regional project, and has submitted a grant proposal for state funding to implement several GI practices at the site.
- Hudson River Sloop Clearwater, Inc. submitted a successful proposal to the NYS DEC Urban and Community Forestry Grant program to implement tree plantings that were planned as part of GI plans for several sites developed in the HVRC regional project, including the Beacon City Hall and the Beacon Center county building on Main Street. This will be implemented in 2012.
- The City of Yonkers Department of Parks, Recreation and Conservation is seeking funding to implement a concept plan for GI retrofits at Coyne Park, using concept plan developed through this 604b project. The full concept plan includes parking lot area reduction, permeable paving in various locations including an infiltration strip with tree plantings, a rain garden, rain barrels, and a stormwater planter.

The Hudson Valley Regional Council, with another partner organization, the Lower Hudson Coalition of Conservation Districts, will be working with support from another 604B grant from NYS DEC to provide ongoing support, outreach and coordination for stormwater management, green infrastructure and water quality activities in the region from 2012-2014. This project will provide some resources for ongoing tracking and technical support for GI project implementation by municipalities, non-profit organizations and other property owners and community stakeholders, and we look forward to working to support ongoing planning and implementation of green infrastructure in the region.

Summary of Activity

Objectives, Tasks, & Outcomes

Work plan objectives should be clearly linked to final project outcomes. For each objective listed on the work plan, a brief summary of the tasks and activities should demonstrate how project deliverables and outcomes have accomplished that objective.

Objective

1) Project planning and development of project team

Task Summary & Project Outcomes The project team met several times to discuss project goals, procedures, training needs and other issues. Team leaders (including the project manager and the lead design consultant), with support from technical advisors, provided initial guidance to community outreach leaders about priorities and steps for seeking GI planning sites, outreach to interested stakeholders including site owners in each community, and other tasks.

Objective

2) Develop and compile educational materials, training curriculum, presentations and website

Task Summary & Project Outcomes This objective was designed to develop educational materials and compile existing educational materials to support project implementation. Team leaders developed an introductory presentation describing the regional GI planning project and basic goals and principles of GI. Educational and technical support materials, including new material about specific GI practices and other priority issues, were obtained through web searches and other steps and key materials were posted on project website, which was primarily designed as a repository for the project team. Development of the project website included consideration of several options for hosting and other technical issues and we decided that creating a separate site to house these materials would be most feasible, with a link at the Hudson Valley Regional Council's green infrastructure page to the GI project site.

Objective

3) Training and capacity development for community outreach leaders

Task Summary & Project Outcomes The primary focus in this objective was to provide community outreach leaders with enough background to begin work with stakeholders in their respective communities to identify good planning sites and appropriate GI practices. The training and capacity development process included training workshops about GI practices, factors for considering specific sites, site evaluation, and how GI projects could support goals of site owners, occupants and the community. Team leaders provided support to the outreach leaders as needed throughout the project, and as questions arose we reached out to outside sources including design professionals in the region, NYS DEC staff, and non-profit and academic organizations with relevant expertise.

Objective

4) Outreach and community organizing to build local partnerships

Task Summary & Project Outcomes A key goal for this objective was building local interest and support among local stakeholders (eg. elected officials, watershed groups, business owners, etc.) for GI retrofit implementation, and to engage them in contacting sites where GI concept plans might be developed. This process began with contacting existing organizations, committees, etc. in each community with some potential relevance to GI planning, including local watershed organizations, citizens advisory committees (CACs), tree commissions, etc., as well as the chief elected official in participating municipalities. An initial kickoff meeting was held in each of the seven participating places. Community outreach leaders, with support from team leaders, gave introductory presentations at these kickoff meetings and other meetings, in some cases at regular meetings of existing groups, and invited local stakeholders to participate in identifying promising sites for GI plans and beginning the site assessment process.

Objective

5) Data compilation and community-based GI project & site inventories

Task Summary & Project Outcomes This objective was designed to support development of GI concept plans by obtaining the necessary background data, beginning the compilation of data about specific sites, and compiling GIS mapping data expected to be required for using the LIDRA model. As the project proceeded, in part due to unexpected delays and challenges in using LIDRA as originally planned, the focus of data collection to support most project tasks focused almost completely on assessment of individual sites being considered for development of GI plans. Community outreach leaders conducted initial site visits and gathered data, and then worked with the lead design consultant and project manager to evaluate site conditions and other factors to begin identifying promising sites and appropriate GI practices for each one. While as it turned out LIDRA was not used as originally envisioned to assess proposed sets of GI practices for specific watersheds or sewersheds, as preparation for the LIDRA training workshop, participants were asked to prepare data sets specifying parameters appropriate to each geographic area based on parameters such as street and sidewalk width, lot size, etc. for areas to be modeled, and they were also asked to obtain local precipitation data. Key data sources for site assessment and obtaining information and materials for GI concept plans, in addition to visual observations from site visits and information from site owners, occupants and other sources, included the NRCS Web Soil Survey, Google Maps (for aerial images, street addresses, etc.), surveys, site plans or subdivision maps in some cases where they were available, and other mapping and data.

Objective

6) Develop green infrastructure project scenarios and produce 70 GI concept plans

Task Summary & Project Outcomes Through discussions with property owners, their consultants, local officials and other local stakeholders, and after review of information about site conditions, community goals and other factors, project team members began identifying potential GI practices that might be appropriate at specific sites. Initial ideas were refined through follow-up discussions with owners and the other local stakeholders interested in certain sites. Certain GI concept plans were prepared and presented fairly early in the process when local goals indicated this might be useful as part of planning a construction project that was moving forward relatively quickly. As sites and practices were finalized, the initial GI scenarios were developed into final plans over the course of the project. A total of 109 separate GI plans were finalized for 54 sites and are being provided to site owners for their use.

Objective

7) Public education related to green infrastructure concepts and benefits, & newsletter for MS4s

Task Summary & Project Outcomes Two educational newsletters sponsored through this project were prepared by the Orange County Soil and Water Conservation District for MS4 communities, each focused on GI concepts, practices, demonstration projects and related issues. Educational presentations about the benefits of GI and discussion of GI planning and related issues were sponsored at a number of events, including a workshop sponsored by the Hudson River National Estuarine Research Reserve and the NYS DEC Hudson River Estuary Program in October 2010, a conference about GI in December 2010 in NY City sponsored by the Institute for Sustainable Cities at CUNY, a breakout session at a large conference sponsored by NYS DEC and SUNY New Paltz on December 13 2010, and the annual conference of the Hudson River Watershed Alliance held on December 15 2011. Additional educational events included a hands-on rain barrel workshop presented by Cornell Cooperative Extension of Dutchess County in July 2010, a presentation as part of a program at the Newburgh waterfront on September 24, 2011, and a talk at the Lower Hudson Coalition of Conservation Districts annual stormwater conference on October 19, 2011.

Objective

8) Final report including findings and recommendations

Task Summary & Project Outcomes Key findings and recommendations based on experience gained in this project include: 1) Municipal officials and other key participants in decision-making at the local level need ongoing training in basic concepts and other aspects of GI goals, benefits, costs, maintenance, and related topics. 2) In some contexts, it may be useful for NYS DEC and NYS EFC to consider a more flexible approach to defining eligible GI practices for education, planning and demonstration projects, especially in

retrofit situations (eg., to include practices that can improve water quality but may not reduce runoff per se, such as improving an older stormwater pond for better water quality performance based on newer design standards). 3) The commitment of local stakeholders to participate effectively in demonstration projects like this one may be enhanced if the initial selection process for communities and sites includes some competitive process or other steps that requires site owners, community leaders or others at the local level to invest some time up-front as a test of their interest. 4) A useful next step demonstration project would be to develop a training and outreach plan, including a training curriculum, to focus on working with watershed groups and other community-based organizations for site identification and GI planning for certain GI practices. This approach could also include prioritizing certain practices based on how likely they are to be applicable at a broad range of sites, focusing more, for example, on pervious pavement, which can be used in many sites and situations, and somewhat less on practices like green roofs, which are less likely to be appropriate for as many sites.

Objective

9) Reporting

Task
Summary
& Project
Outcomes

Reports were prepared and submitted on schedule throughout the project.

Problems Encountered/How Solved

A comprehensive summary of any problems encountered during the life of the project and how those problems were resolved should be listed. The list should include any information reported in the "Problems Encountered/How Solved" box on the Quarterly Report Cover Pages throughout the project.

The most significant problem we encountered was the delay in availability of a users manual for the LIDRA modeling software, and related challenges in implementing the LIDRA training for stakeholders in participating communities. LIDRA (low impact development rapid assessment) is a model for evaluating combinations of green infrastructure (GI) practices at the scale of a small watershed. It is still undergoing development and refinement and it was suggested that this GI planning project include pilot testing it in the Hudson Valley, and this was included in the original proposal and workplan. A planned LIDRA users manual was supposed to have been funded as part of a separate NYS DEC grant to other recipients (the Hudson Valley Regional Council is not involved in that grant or in producing the users manual and other components of the other grant.) The other grant's implementation was delayed, apparently due to state budget issues, and the users manual has not been available. Also, during initial LIDRA trainings for project staff we learned that using this model is more involved than expected. It became clear that because of the training and preparation involved, including time and background knowledge required for developing input data based on actual conditions in sub-basins or neighborhoods to be modeled, the original concept for how LIDRA could be applied in this project was not feasible. As a result, over the course of the project, we modified our approach to using LIDRA in this project. The selection of GI planning sites and scenarios for development of 70 GI concept plans, the primary focus of this project, was implemented without using LIDRA to test different scenarios. The initial LIDRA orientation webinar and the 1/2 day workshop were presented as a hands-on educational training without expectations that it would necessarily be applied by local stakeholders during this project. A shorter followup workshop was also presented, and this was used to test a different approach to using LIDRA wherein GI simulations for one part of Poughkeepsie were prepared ahead of time and used as the basis for an interactive discussion about which combinations of GI practices might have the best cost-benefit outcomes. These changes to how LIDRA was applied during this project did not adversely affect the selection of GI planning sites and development of concept plans for these sites, which proceeded in large part as planned using input from community members and other information.

Changes to Project Work Plan

Any changes that were made to the project work plan during the life of the project should be noted, including a brief description of why the changes were necessary.

As described above, the workplan was modified during the project to reduce the emphasis on using LIDRA to guide GI site and practice selection. This was necessary in part because NYS DEC funding for a separate project, which includes development of a LIDRA users manual, was delayed and the users manual has not been available for use in our GI planning project. There were no other significant changes to the workplan.