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The Poughkeepsie Underwear Factory/Fall Kill Green Infrastructure Project
NEIWPC Job Code: 0100-113-008
Project Code: 2012-044
Final Report



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1. GENERAL OVERVIEW

This report summarizes work performed by eDesign Dynamics (EDD) and its project partners Hudson River Housing (HRH), Hudson River Clearwater Sloop (Clearwater), Urban Landscape Lab (ULL), and LandMINE Studio (LMS). This project was funded through a grant administered by the New England Interstate Water Pollution Control Commission (NEIWPCC) and funded by the New York State Department of Environmental Conservation (DEC). The project title is **The Poughkeepsie Underwear Factory/Fall Kill Green Infrastructure Project**. The purpose of this project was to design and construct green infrastructure practices to accompany the restoration and redevelopment of the Poughkeepsie Underwear Factory building in its conversion to residential and commercial community space. In order to improve water quality in the nearby Fall Kill Creek, the team proposed the installation of a stormwater treatment wetland to receive runoff from the roof of the historic Underwear Factory building, in addition to runoff generated from a proposed parking lot to be installed by the property owner at a future date.

1.1 PROJECT OBJECTIVES

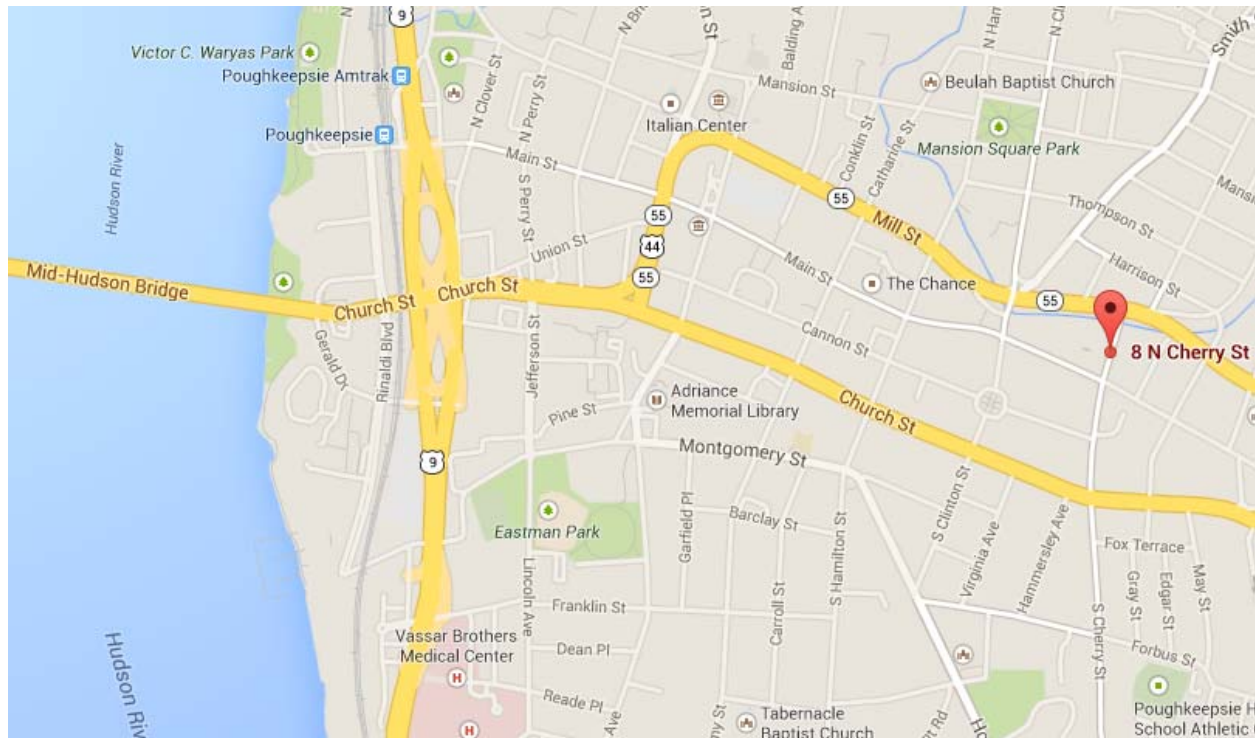
The project goals involved the design and construction of a stormwater treatment wetland that treats and reduces urban stormwater runoff through biofiltration and infiltration. The project's central location, its proximity to the Fall Kill, and the property owner's plans for redevelopment made it an ideal candidate for demonstrating how green infrastructure can be a crucial component in improving community space, water quality, and the urban environment as it is incorporated in forward-thinking redevelopment plans.

The project sought to manage runoff generated by a 1.1-inch precipitation event falling on the existing underwear factory building, along with a planned parking lot to be constructed at a future date. This was to be accomplished through a combination of green infrastructure. Namely, a bioswale and stormwater treatment wetland. These green infrastructure installations were to be populated by native wetland vegetation which will attract wildlife and create valuable biological activity in what would otherwise be a much less biologically active urban environment. The retained stormwater will also help to reduce the amount of stormwater entering the Fall Kill, helping to mitigate any downstream flooding that may occur.

1.2 SITE DESCRIPTION

The project is located at 8 N. Cherry Street in Poughkeepsie and is owned by project partner HRH. The site is approximately 0.52 Acres, including 7,570 SF of existing building footprint, 5,684 SF of future impervious surfaces, 2,928 SF of future permeable parking area, and 6,535 SF of permeable landscape area. The soil discovered on site consisted of urban fill with many brick, wood, and concrete fragments.

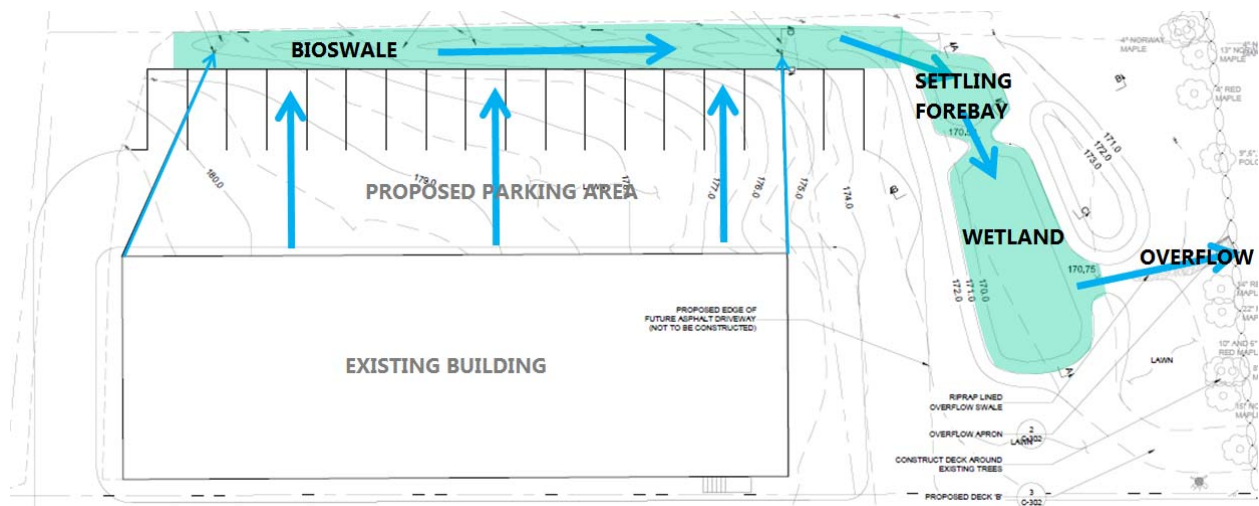
Figure 1 - Site Location



1.3 SYSTEM CONFIGURATION

The project was designed to accept sheet-flow from the future parking lot in a bioswale populated with native herbaceous plants, which then conveys the runoff to a settling forebay where sediment will be removed. Upon construction of the parking lot, roof leaders from the existing underwear factory building will be directed to discharge into the bioswale at points armored with rip rap to dissipate energy and minimize erosion. After reaching the forebay, runoff will then make its way to the larger treatment wetland where biofiltration and infiltration will occur. The settling forebay and treatment wetland were sized, through a combination of extended detention and planting medium storage, to manage the first 1.1-inches of precipitation falling on the project site. This volume calculation was performed according to the DEC's water quality volume method. During events greater than 1.1-inches, a rip rap armored overflow swale was designed to discharge runoff into the nearby Fall Kill Creek. It should be noted that any volume over the 1.1-inch volume will need to pass through the GI system before entering the Fall Kill, and so will still receive a degree of biofiltration treatment. After precipitation has ended, the volume retained within the treatment wetland will infiltrate.

Figure 2 - Site Plan and Flow Diagram



1.4 PROJECT CONSTRUCTION

Project construction commenced in September, 2013. The contractor selected was Siegrist Construction, LLC., of Poughkeepsie, NY. Sediment and erosion control measures were installed first. Once this was complete, site grading began. The original plans called for all graded material to be balanced on-site, however, the total volume of soil generated by earthwork activities exceeded and material needed to be removed from the site. This removal effort was coordinated with the assistance of Lee Reiff of DEC in helping the project team locate an approved disposal facility.

In parallel to the removal effort, a source for a clean planting medium needed to be identified. Another local contractor, Greenway Environmental Services, was selected to fulfill this order. Once the removal of the necessary volume of fill was complete, clean fill began to be trucked to the site for final grading purposes. Final grading was completed in the middle of November, 2013, and shortly thereafter the planting of approximately 4,800, 2-inch wetland and upland plugs was conducted.

Throughout the construction process ULL and LMS collaborated with Clearwater and HRH in the development of educational signage. The final design was decided to be a series of walkable concrete pavers cast with project information on them. The result will be the creation of a space defined by the pavers to serve the double purpose of a community meeting area and raising public awareness on the purpose and benefits of the project.

Shortly after plantings were completed, a publicity event was held by MannaJo Green of Clearwater. Frances Dunwell of DEC, along with project partners, spoke at the event regarding the project and the many benefits of green infrastructure. Representatives from the community, DEC, and other organizations were present.



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2. CONCLUSIONS

The successful construction of the treatment wetland at the Poughkeepsie Underwear Factory will serve as a replicable example of green infrastructure in an urban environment. The volume of stormwater retained during precipitation events will help to mitigate downstream flooding of the Fall Kill, as well as help to improve its water quality. The incorporation of public outreach and the construction of a community space will help raise public awareness of the benefits of green infrastructure and its crucial role in designing for a cleaner, more healthy, and more sustainable environment.