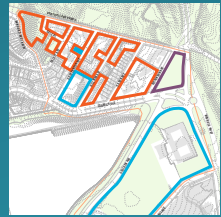


## WHY HARLEM RIVER HILLTOP?

The project area for this green infrastructure plan is at the top of the Harlem River watershed. Saddled between Van Cortlandt Park, Jerome Park Reservoir, and several schools, this area contributes to two major Combined Sewer Overflows (WI-056 and WI-068) that discharge raw sewage and polluted stormwater into the Harlem River nearly every time it rains. This area borders Van Cortlandt Park and has corridors of mature trees along Mosholu Parkway, but there are also many impervious surfaces and compacted soils that channel stormwater to the street during heavy rainfall and cause flooding throughout the neighborhood. A comprehensive green infrastructure plan for this area will help mitigate CSO pollution in the Harlem River and local flooding, as well as provide many environmental benefits to the neighborhood.



### FEW LAND OWNERS :

Much of the land is owned by Amalgamated Housing Co-op, the Parks Department (NYC Parks), Department of Environmental Protection (DEP), Department of Education (DOE), and the Department of Transportation (DOT). This simplifies getting buy-in from multiple property owners.



### COMMUNITY BENEFITS:

Green infrastructure has many extra benefits beyond stormwater management. Improving air quality and aesthetics, increasing recreational and educational opportunity, and providing space for potential urban agriculture are just some of the community benefits that can be gained through green infrastructure.



### MAGNITUDE:

Green infrastructure benefits are maximized when they are part of an interconnected system. This hilltop plan at the top of the watershed is a template that can be replicated throughout the watershed, magnifying the water quality impact and distribution of benefits.

## WHY GREEN INFRASTRUCTURE?

Green infrastructure (GI) is a cost-effective way to manage stormwater runoff to reduce combined sewer overflow into the Harlem River, when compared to traditional systems of grey infrastructure that capture and convey stormwater to a wastewater treatment plant. GI manages stormwater on site by infiltrating it into the ground. GI also provides many benefits that traditional grey infrastructure does not; GI can have positive impacts on energy consumption, air quality, atmospheric carbon reduction and sequestration (capturing carbon), urban heat island effect, education, habitat, and other elements of community and environmental health. Some of those benefits are quantified in this brochure.

## CONSIDERATIONS AND NEXT STEPS FOR THE HARLEM RIVER HILLTOP GREEN INFRASTRUCTURE PLAN

Some of the recommended projects in this plan can be implemented easily and immediately, some will require significant funding and design, and there are many in between. Overall, future implementation of this plan relies on coordination between the city agencies involved and securing funding from multiple sources, including DEP.

For more information on all the proposed projects & their benefits, please visit: [www.riverkeeper.org/harlemriverhilltop](http://www.riverkeeper.org/harlemriverhilltop). Below is a brief synopsis of the recommended projects for each of the major land owners in the study area:

**Amalgamated Houses:** Courtyard meadows and rain gardens can be planted in existing open spaces immediately, but Amalgamated Housing's gardening staff will have to be trained on new management techniques. To initiate more technical projects, like a terraced stormwater feature along Van Cortlandt Park South or a green roof, Amalgamated should work with a landscape architecture firm to develop conceptual plans. These projects would be eligible for funding under DEP's Green Infrastructure Grant Program.

**Department of Education:** P.S. 95 has a small yard that could be turned into a green schoolyard immediately. There are several examples of green schoolyards throughout NYC, overseen by the Trust for Public Land and funded by DEP. The proposed wetland detention basin on DeWitt Clinton High School's campus could be implemented alongside the school's ongoing sustainability initiatives.

**Public Land:** There is ample space here for DEP, DOT, & Parks to collaborate and implement innovative green infrastructure designs. For example:

- DOT is currently assessing Mosholu Parkway and Sedgwick Avenue for traffic calming under the City's Vision Zero plan. Traffic calming features should incorporate green infrastructure to maximize public benefits.
- The Parks Department is currently developing a Harlem River Watershed & Natural Resources Management Plan, which will include recommendations for new green infrastructure features in Van Cortlandt Park.
- DEP owns underutilized land adjacent to DOT land that could be improved to maximize stormwater capture as well as public use of the space.
- Across all public lands, grassy lawns that cannot be converted to infiltrating green infrastructure due to underground utilities could be transformed into aesthetically-pleasing productive pollinator spaces by planting native wildflowers and meadow vegetation.

## THANK YOU!

This area was selected through input from the Bronx Council for Environmental Quality and the Bronx Community Board 8 Environment & Sanitation Committee. Challenges and opportunities were identified collaboratively with the Bronx Council for Environmental Quality, Amalgamated Housing Board of Directors, the DeWitt Clinton High School sustainability coordinator, and representatives from DEP, Parks, and DOT. Ideas were collected and evaluated by New York City Soil & Water Conservation District and Riverkeeper and this brochure was designed by Perkins + Will.

This Project has been funded in part by a grant from the New York State Environmental Protection Fund through the Hudson River Estuary Program of the New York State Department of Environmental Conservation.



Hudson River Estuary Program

A Program of the New York State Department of Environmental Conservation

### TO LEARN MORE

- Visit our website [www.riverkeeper.org/harlemriverhilltop](http://www.riverkeeper.org/harlemriverhilltop)
- Email [korin@nycswcd.net](mailto:korin@nycswcd.net)

## HARLEM RIVER WATERSHED HILLTOP GREEN INFRASTRUCTURE

### NEIGHBORHOOD CONCEPT PLAN



Conceptual illustration of a terraced stormwater feature down the stepstreet of Van Cortlandt Park South

— Chrissy Remein, Riverkeeper

JUNE 2018



in collaboration with  
**PERKINS+WILL**

**TERRACED STORMWATER**- This unique stormwater management approach uses the slope of the staircase to create a cascading stormwater terrace that collects water in an infiltration basin at the bottom of the slope (see cover painting).

**LEGEND**

This map delineates property owners and indicates different types of proposed green infrastructure. The collective benefits of all these GI measures is calculated in the call out boxes by each major property owner. For more information on the type of green infrastructure proposed and the potential benefits they provide, visit the background and methodology page at [www.riverkeeper.org/harlemriverhilltop](http://www.riverkeeper.org/harlemriverhilltop).

- Amalgamated Housing Property
- Department of Education Property
- Water flow Direction
- 1 FT topography lines
- Unique GI Projects

**INFILTRATING LANDSCAPE**

infiltrating basins with water-loving plants, have high stormwater capacity and attract pollinators

**GREEN ROOFS**

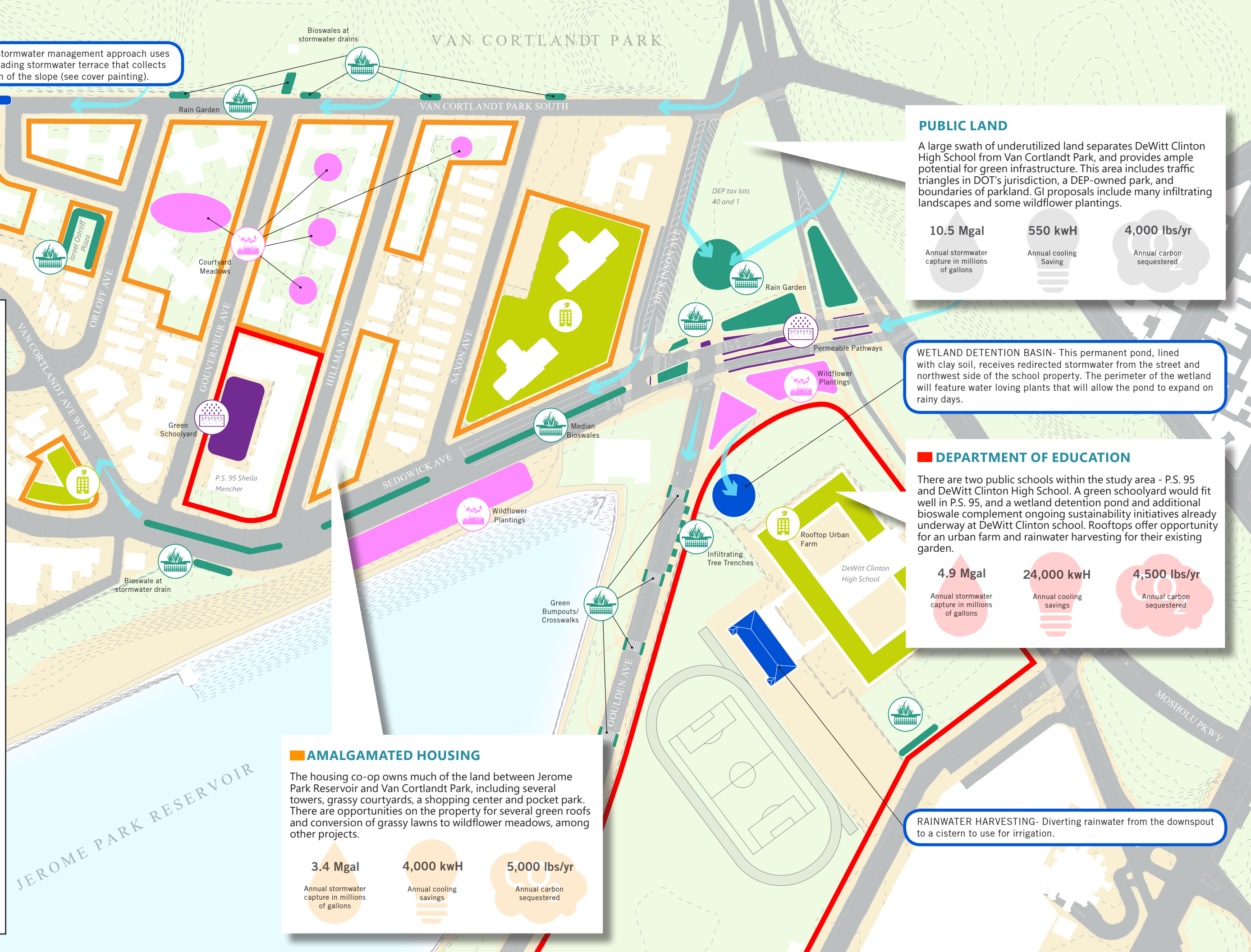
vegetated rooftops reduce energy consumption and mitigate Urban Heat Island effect

**POLLINATOR GARDENS**

native wildflowers attract pollinators and improve aesthetics

**PERMEABLE SURFACES**

permeable pavers, asphalt and concrete allow water to infiltrate while maintaining a hard surface



**PUBLIC LAND**

A large swath of underutilized land separates DeWitt Clinton High School from Van Cortlandt Park, and provides ample potential for green infrastructure. This area includes traffic triangles in DOT's jurisdiction, a DEP-owned park, and boundaries of parkland. GI proposals include many infiltrating landscapes and some wildflower plantings.

**10.5 Mgal**  
Annual stormwater capture in millions of gallons

**550 kWh**  
Annual cooling Saving

**4,000 lbs/yr**  
Annual carbon sequestered

**WETLAND DETENTION BASIN**- This permanent pond, lined with clay soil, receives redirected stormwater from the street and northwest side of the school property. The perimeter of the wetland will feature water loving plants that will allow the pond to expand on rainy days.

**DEPARTMENT OF EDUCATION**

There are two public schools within the study area - P.S. 95 and DeWitt Clinton High School. A green schoolyard would fit well in P.S. 95, and a wetland detention pond and additional bioswale complement ongoing sustainability initiatives already underway at DeWitt Clinton school. Rooftops offer opportunity for an urban farm and rainwater harvesting for their existing garden.

**4.9 Mgal**  
Annual stormwater capture in millions of gallons

**24,000 kWh**  
Annual cooling savings

**4,500 lbs/yr**  
Annual carbon sequestered

**AMALGAMATED HOUSING**

The housing co-op owns much of the land between Jerome Park Reservoir and Van Cortlandt Park, including several towers, grassy courtyards, a shopping center and pocket park. There are opportunities on the property for several green roofs and conversion of grassy lawns to wildflower meadows, among other projects.

**3.4 Mgal**  
Annual stormwater capture in millions of gallons

**4,000 kWh**  
Annual cooling savings

**5,000 lbs/yr**  
Annual carbon sequestered

**RAINWATER HARVESTING**- Diverting rainwater from the downspout to a cistern to use for irrigation.