

University Towers Stormwater Retrofit Project

Montgomery County Capital Improvements Project to Provide Water Quality Treatment of Stormwater Runoff

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Project Overview

The Montgomery County Department of Environmental Protection (DEP) is proposing to install twelve new stormwater management facilities at the University Towers Condominium (map 1). The facilities, called Environmental Site Design (ESD) practices, are intended to capture and treat stormwater runoff from small drainage areas or sections of parking lot by: 1) filtering pollutants from stormwater, 2) reducing the overall volume of stormwater flowing from University Towers to the Breewood Tributary and 3) allowing water to soak into underlying soils and recharge groundwater supplies which helps maintain stream flow in the Breewood Tributary during dry periods. For more information please visit the project web page at: <https://www.montgomerycountymd.gov/DEP/Restoration/breewood.html>

Three types of ESD practices proposed at University Towers include: 1) Bioretention / Micro-bioretention, 2) tree boxes (also known by their commercial name Filterra) and 3) permeable pavers. Based on input from University Towers residents and members of the HOA board, parking loss associated with these facilities is a major concern. There is **no parking loss** with the ESD practices currently proposed.



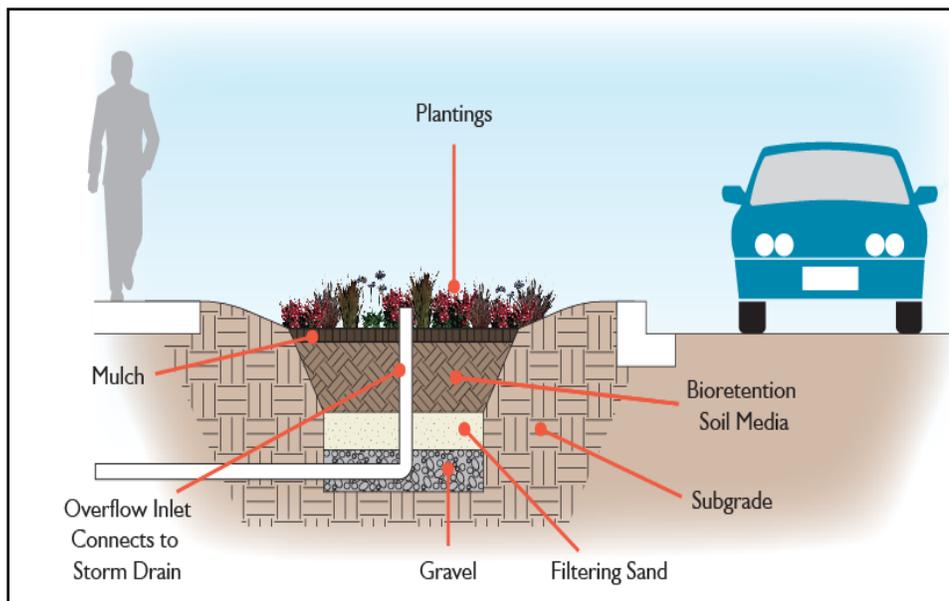
Table 1. ESD facilities proposed at University Towers

ESD Facility Number	ESD Facility Type
1	Permeable Pavers
2	Bioretention
3	Bioretention
4S	Tree Box
4N	Tree Box
4N-1	Tree Box
5	Permeable Pavers
6	Bioretention
7	Permeable Pavers
8-1	Tree Box
8-2	Tree Box
9	Micro-bioretention

Map 1. Locations of all proposed ESD facilities proposed at University Towers

Three types of ESD facilities being proposed at University Towers:

1) **Bioretention and Micro-bioretention facilities** both resemble a typical garden area that is slightly depressed into the landscape so they capture water flowing into them. Once in these facilities, water soaks down through the planting media and into layers of sand and gravel. It's during this process that much of the pollutants are removed. Some pollutants, such as bacteria, oils & greases are broken down by microbes in the soil, while others, such as metals, are retained in the mulch and soil media, which is periodically replaced during routine maintenance. On the surface both bioretention and micro-bioretention facilities are mulched and planted with native plants. The only difference between the two is bioretention facilities have underdrains while micro-bioretention facilities do not.



Schematic of bioretention or micro-bioretention (without an underdrain)

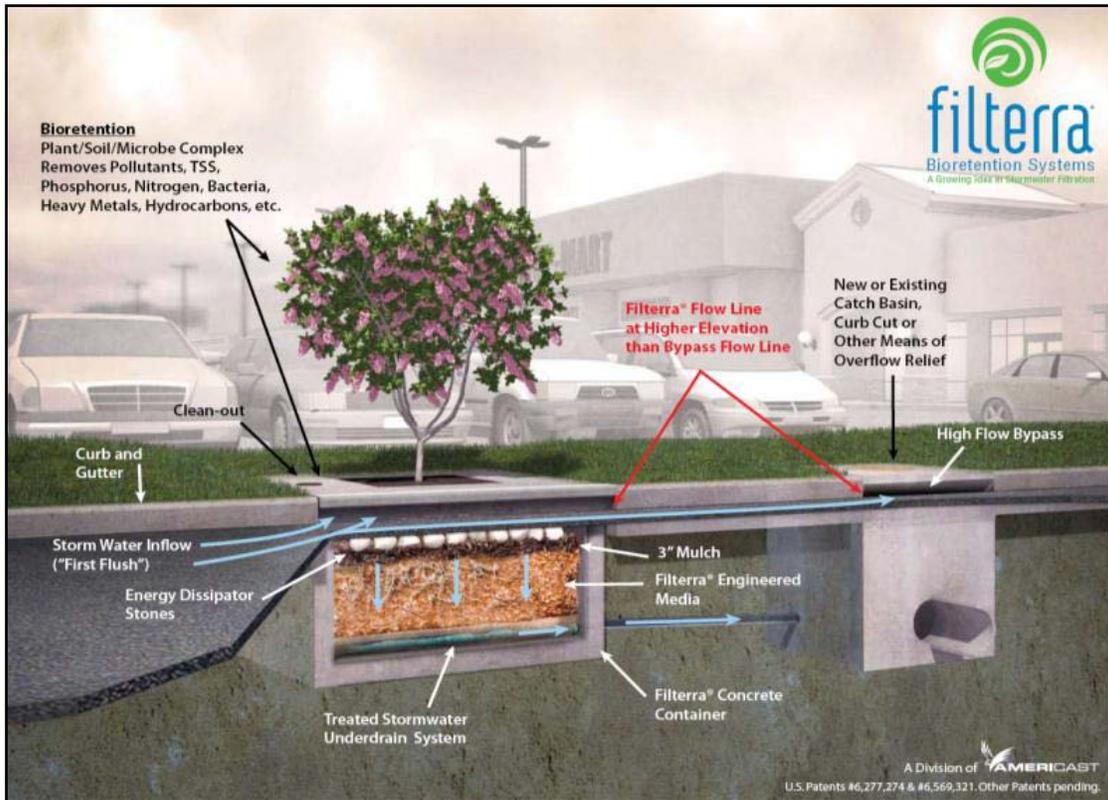


Micro-bioretention Example - Forest Estates



Bioretention Example - Ridgeview Middle School

2) **Tree boxes (or 'Filterra')** are concrete boxes that are installed next to existing storm drain inlets and are filled with planting soil. They are similar to bioretention facilities in that they intercept stormwater before it reaches the storm drain inlet and provide filtration as stormwater soaks through the planting soil to an underdrain that connects to the adjacent storm drain system.



Schematic of tree box

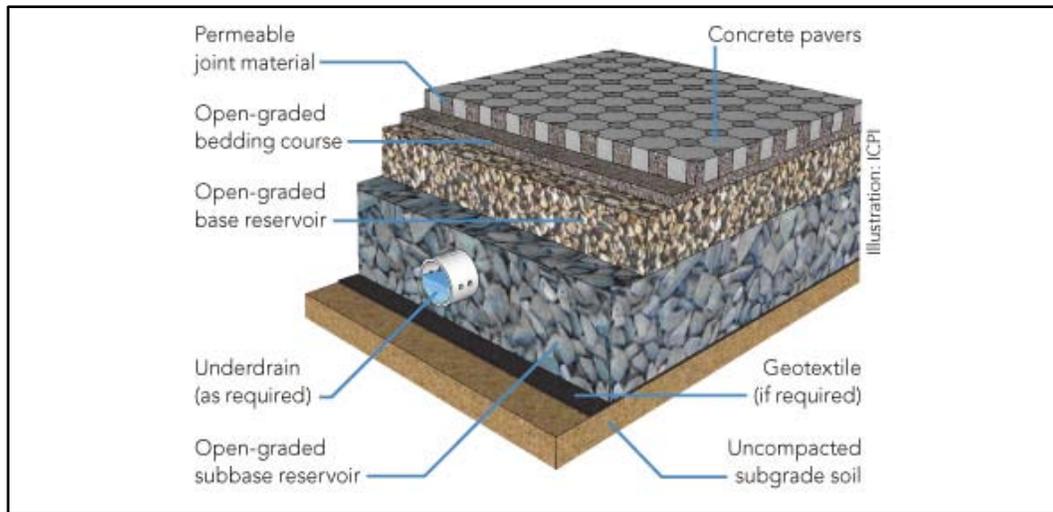


Tree Box Example - White Oak Library



Tree Box Example - Dennis Ave Health Center

3) **Permeable pavers** allow water to soak through gaps between pavers. Cars can park and drive on permeable pavers. The paving surface consists of interlocking concrete pavers with joints wide enough to allow water to flow through to underground storage within underlying gravel similar to the schematic shown below. Sometimes a storm drain inlet is located adjacent to permeable pavers to collect overflow water during larger events. Underneath is a load-bearing bed of gravel with void space to store water, allowing time for it to soak into subgrade soils. Excess stormwater flows out through an underdrain to nearby storm drain system. The photo below is an example of permeable pavers installed along Park Valley Drive in the Sligo Park Hills neighborhood near Takoma Park.



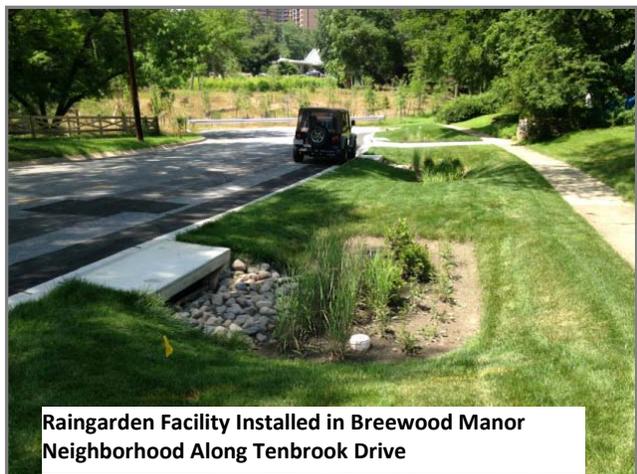
Schematic of Permeable Pavers



Permeable Pavers Example - Sligo Park Hills community

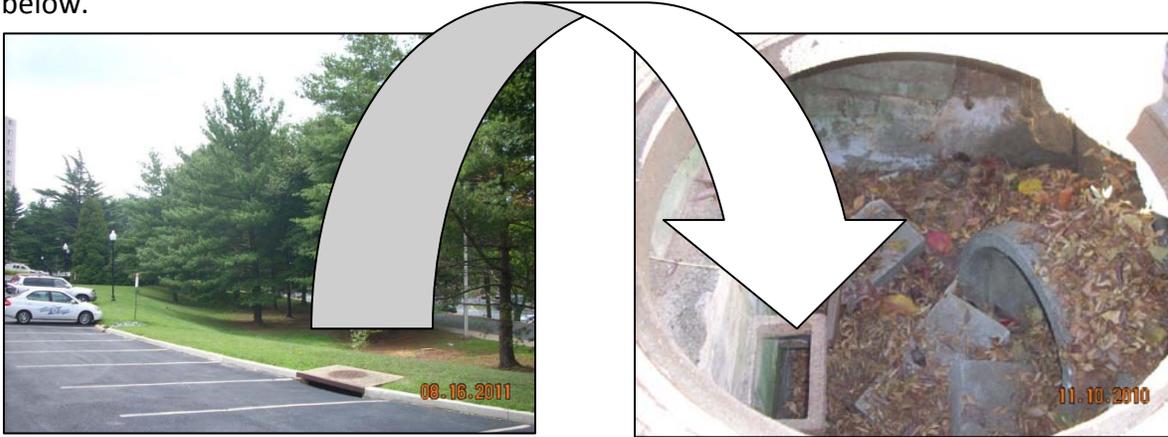
Why is the County Proposing this Project at University Towers?

The Breewood Tributary is a stream which originates directly across University Boulevard from University Towers that has been severely degraded due to the lack of stormwater management and the resulting stream channel erosion. DEP has targeted the Breewood Tributary for a comprehensive restoration effort that; 1) repairs damage to the stream channel caused by decades of erosion and 2) manages stormwater runoff from much of the contributing drainage area, or watershed. The map on **page 8** shows all areas within the Breewood watershed where new ESD facilities have been installed and stream restoration completed. Restoration of the Breewood Tributary was completed in May 2015 (see photo below) and installation of new ESD facilities along roadways in the Breewood Manor Neighborhood was completed in October 2014 (see photo below). ESD facilities were also installed on three residential properties where home owners gave permission (photo below). Additionally, plans are underway to install a bioretention facility at the end of Breewood Road and at Northwood Presbyterian Church. Stormwater facilities are currently in place at Northwood High School, the townhouses on Hemingway Court, and along portions of Arcola Avenue. Parking lots at the University Towers are a large part of the impervious area left without stormwater management in the watershed. Therefore, installing ESD facilities to treat stormwater runoff from University Towers is crucial to improving conditions in the Breewood Tributary to the maximum extent practicable.



How do the proposed stormwater facilities benefit University Towers residents?

- Improvements to the parking lot and existing stormdrain system including replacement of the stormdrain inlet in the parking lot directly west of the pool at proposed facility 3. This inlet is in poor condition as bricks forming the interior wall are loose and dislodged as seen in photos below.



Damaged Stormdrain Inlet Near Proposed Facility 3

Inside Damaged Stormdrain Inlet

- Repair of the damaged concrete apron at the end of the 24-inch storm drain at University Boulevard near the bus stop. This storm drain outlet carries all of the stormwater flows from the entire University Towers property. Due to the presence of a 72-inch high pressure water main belonging to WSSC and the associated 40 foot wide easement, this repair must be reviewed and approved by WSSC
- Landscaping associated with bioretention, micro-bioretention and tree box facilities will complement existing landscaping on the grounds. Landscaping within these facilities will be maintained by DEP's maintenance program throughout the year.
- DEP's design engineers will take input from the community to try to ensure that the facilities properly **address drainage concerns and runoff related safety issues**. Information from the community about areas that have particularly high flows or where erosion is occurring will be incorporated in the design of these facilities where feasible, such as is the case with facility number 9.

Who pays for the installation and maintenance of proposed stormwater facilities?

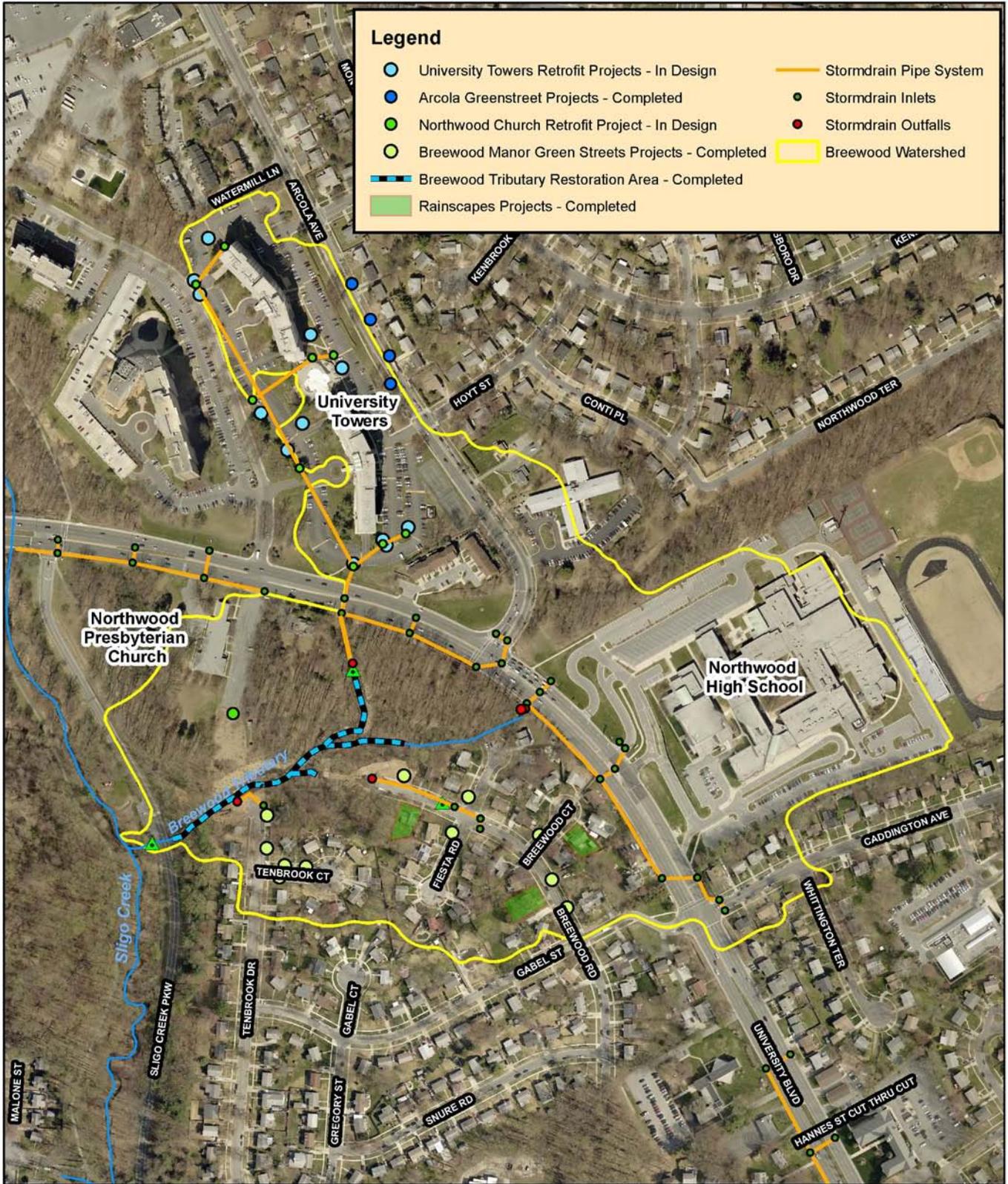
- DEP will fund 100% of the construction cost.
- All maintenance of the new stormwater facilities will be performed and funded by DEP.
- If any infrastructure is damaged during construction, DEP's contractor repair or replace in kind. Most impacts can be anticipated and will be called out in the final construction plans ahead of time.

How are these facilities beneficial to surrounding areas and the community at large?

- They play a crucial part in the County's effort to improve conditions in the Breewood Tributary, Sligo Creek and the Anacostia River by:
 - Improving water quality, as much of the stormwater runoff, particularly during the beginning of storms (known as the 'first flush' which contains higher concentrations of pollutants), is retained in stormwater facilities and filtered through vegetation and soil.
 - Reducing storm flows which help, 1) maintain a stable stream channel, 2) prevent the loss of trees along the stream banks and 3) improve overall stream ecosystem.
 - Reducing impacts from sediment washed out of the Breewood Tributary and into Sligo Creek and the Anacostia River.
- Provide habitat for birds, butterflies and other pollinators which helps sustain a healthier ecosystem in a dense suburban area.
- The plants in these facilities help improve local air quality.

Implementation Process at University Towers

1. Once the decision is made allowing the installation of ESD stormwater facilities on University Towers property, DEP will continue with design plans.
2. University Towers representatives will have the opportunity at several key stages during the design phase to comment on the plans.
3. When plans reach the "60% completion phase", University Towers will be asked to sign easement documents allowing DEP access to the property to construct and maintain the facilities.
4. A meeting with the University Towers board and residents will be held when plans are nearly complete to present final plans. Minor comments will be accepted, but no major changes will be allowed after this point unless an engineering concern is raised.
5. Once construction is underway it is expected to take **6-8 months to complete all 12 facilities**.
6. Once construction is complete, DEP will assume maintenance responsibility of all new stormwater facilities.



Map 2 Breewood Watershed Restoration Projects