Community-Based Restoration Addressing Chesapeake Bay Water Quality: A study and implementation of water management strategies in the Three Oaks Community, Silver Spring, MD

Project Goals

Together with the Friends of Sligo Creek (FOSC), the Three Oaks Community Association (3OA) seeks to reduce stormwater runoff from our impervious surfaces by 90% through water diversion into dry wells and conservation plantings, as well as replacement of some impermeable asphalt with pervious pavers in locations where overflow can drain into landscaped areas.

Background

Three Oaks is a community of 53 townhouses built in the 1960s near Sligo Creek in Silver Spring, MD. Sligo Creek is a tributary of the Anacostia River. The private cul-de-sac and parking lot is one block uphill from Sligo Creek at the intersection of Sligo Creek Parkway and Three Oaks Drive. Our concrete sidewalks and parking lot (which includes an asphalt travel lane and parking spaces) are comprised of impervious surfaces that channel stormwater into drains that empty directly into Sligo Creek. Water that misses storm drains during heavy rainfall events flows like a river down Three Oaks Drive to Sligo Creek Parkway and into the creek. (Sligo Creek Parkway is sometimes closed at our intersection due to flooded road conditions.) Stormwater from neighborhoods uphill and runoff from house gutters adds to the significant flow of water that empties into Sligo Creek.

FOSC members and Montgomery County RainScapes staff helped 3OA residents realize how untreated stormwater runoff, much of it carrying urban pollutants, was damaging the creek, which eventually reaches the Chesapeake Bay via the Anacostia River.

Project context

The 3OA community lies one block north of Sligo Creek Parkway between Wayne Avenue and Colesville Road. This 0.8-mile stretch of Sligo Creek Parkway is heavily urbanized. Residential areas range from R-60-zoned single-family homes along Sligo Creek Parkway to a 16-story high-rise condominium uphill from Three Oaks on Manchester Road to multi-family apartment complexes along Manchester Road and Wayne Avenue.

FOSC and the 3OA Community aim to reduce stormwater that runs into Sligo Creek by 90 percent. Sligo Creek Watershed has been an important part of Montgomery County's Municipal Storm Sewer System Permit Program (MS4) plan. There are currently no Green Streets upstream from this project, and few stormwater remediation projects. Our proposal to take a comprehensive approach to managing stormwater before it reaches Sligo Creek fits well into the county's plan to capture significant water flows before they enter Sligo Creek.

In 1992 and again in 2005, the 3OA Community commissioned a drainage assessment as part of its review of capital improvements. Efforts at that time were designed to drain and move water away from our homes and off individual property sites, where basement flooding was common.

Over the next decade, as concerns about water quality issues increased, 3OA began to focus on better environmental remediation strategies. Between 2009-2014, 3OA installed five gutter catchment systems, with three of them draining into rain gardens to absorb water from the rear roofs and gutters of 18 of our homes. (A RainScapes rebate paid for part of one rain garden). Unfortunately, some of the gutters of other homes still run to the parking lot and then to storm drains due to lack of accessible downhill landscape areas. We also installed a dry well to hold and disperse the water that drains from our community pool deck. In addition, as we were forced to cut down some mature, threatening, trees, the community began an aggressive planting program that more than replaced every tree removed.

Starting in 2013, 3OA began discussing a stronger water management strategy, one that would address the parking lot water as well as the water coming off our front roof gutters. Discussions with officers of Friends of Sligo Creek, RainScapes staff, and a number of contractors and engineers made us realize that this larger goal

would be significantly more expensive, especially if we installed permeable pavers. We feel that the Chesapeake Bay Trust grant would help us use our matching 3OA funds to better reach our goal of reducing parking lot water runoff by 90 percent.

Because the Three Oaks community sits in a valley, it serves as a funnel for neighborhoods and streets uphill. To ensure that remediation projects would be effective and can be executed within our means, this grant proposal would first fund an engineering/landscape study. The study would prioritize our water management strategies to slow the flow of stormwater and improve Sligo Creek water quality as well as pinpoint the best projects -- we have identified six "funnel" points – to implement as funds become available.

In the Three Oaks Community, stormwater funnels downhill from five residential streets at higher elevation. One long-term area of concern is a steeply sloped bank in the park uphill from 3OA (Seven Oaks Park and playground). A subcommittee from 3OA is working on the erosion and drainage issues with Montgomery County's RainScapes program, the Montgomery County Department of Parks (M-NCPPC) and the state Department of Transportation (DOT), who are all stakeholders and have ownership in the easements around the park. This partnership would help assess remediation strategies for stormwater before it enters the Three Oaks Community, which in turn will reduce the volume of water and associated debris that flows into storm drains and Sligo Creek. These efforts will complement the 3OA proposed concept study and associated projects, contributing to a holistic effort by our community to minimize storm water impacts on the Chesapeake Bay.

Community Context

The association holds at least two annual meeting per year to communicate our plans and current needs to the 3OA community. The stormwater project will be a focus of meetings throughout the life of the project. Others we plan to involve encompass area residents through homeowner organizations and students through area schools (Silver Spring International MS, Sligo Creek ES and Highland View ES) through presentations, demonstrations and volunteer events. Outreach would also include youth participants at a nearby YMCA and a girl scout troop to whom we are connected by 3OA residents.

The Seven Oaks Evanswood Community Association, located uphill from the project site, is a source of significant stormwater runoff through the community and will be a focus of the outreach. The wider Three Oaks community is extremely diverse, as noted below. The project will include outreach focused on residents in the project area and surrounding community, including people who live in single-family homes and residents from low and moderate income rental apartments on Manchester Road.

FOSC has a long history of involvement with stormwater activities. A stormwater committee, formed in about 2005, has installed dozens of projects, and has cooperated extensively with the county Department of Environmental Protection. FOSC has engaged in educational and outreach efforts explaining the problems, reasons for stormwater mitigation, and ways people can help. Committee members have worked with religious institutions, neighborhoods, and Montgomery Housing Partnership to design, supervise installation, and facilitate the community participation in and understanding of the projects. FOSC also works on statewide policy concerns regarding stormwater. If funded, the project would roll into many of FOSC's existing outreach efforts.

Demographic information

3OA plans to reach out to the nearby apartment rental units where residents have diverse cultural and socio-economic backgrounds. We can enlist the help of SligoBranview Community Association and FOSC to set up signs near the intersection of Schulyer Road and Sligo Creek Parkway. We would like to partner with the staff at the County libraries and/or the Long Branch Community Recreation Center to offer information sessions to local residents. Many children walk through the Three Oaks Community to get to Highland View Elementary School, Sligo Creek Elementary School and Silver Spring International Middle School. We'd like to offer our projects as a learning experience via signs and local school field trips or classroom demonstrations.

FOSC has a diverse board, and is working to reach out particularly into the Latino community that surrounds Sligo Creek in significant measure. It could piggyback on a program with CASA de Maryland that educates day laborers about the need for and processes to install stormwater remediation projects. FOSC has a new Latino Outreach Committee and has helped create and participated in the Festival del Rio Anacostia.

Demographics for area schools	Silver Spring International Middle School	Sligo Creek Elementary School	Highland View Elementary School
Alaskan/Native American	<5 %	<5 %	<5 %
Asian	5.2 %	<5 %	<5 %
African American/Black	24.6 %	23.2 %	25.7 %
Hispanic/Latina(o)	36.4 %	11.0 %	29.6 %
Pacific Islander	<5 %	<5 %	<5 %
White	28.3 %	52.3 %	36.8 %
Multi-race	5.4 %	8.2 %	<5 %

Demographic Information (2015 American Community Survey)

D3. RACE		
Universe:		
Total population	5,725	
One race	5,386	94.1
White alone	3,165	55.3
Black or African American	1,185	20.7
American Indian and Alaska Native	0	0.0
Asian	560	9.8
Native Hawaiian and Other Pacific Islander	0	0.0
Some other race	476	8.3
Two or more races	339	5.9
White (alone or in combination)	3,469	60.6
Black (alone or in combination)	1,237	21.6
American Indian (alone or in combination)	126	2.2
Asian (alone or in combination)	721	12.6
Native Hawaiian (alone or in combination)	0	0.0
Some other race (alone or in combination)	511	8.9
D4. HISPANIC OR LATINO (ANY RACE)		
Universe:		
Total population	5,725	
Hispanic or Latino of any race	820	14.3
Not Hispanic or Latino	4,905	85.7
White alone	3,036	53.0
Black or African American alone	1,135	19.8
American Indian and Alaska Native alone	0	0.0
Asian alone	560	9.8
Native Hawaiian and Other Pacific Islander alone	0	0.0

Criteria
To reduce the 3OA community's stormwater runoff by 90 percent, we first propose to conduct a concept study that identifies areas for conservation landscaping, dry wells, permeable pavers and other remediation strategies. A second phase would implement those strategies. Each project identified in the concept study would include detailed engineering and design specifications that we would review with CBT staff. (See set of site maps for existing conditions uploaded as attachment "site assessments.")

Project Evaluation
FOSC has joined cocorahs.org and will be able to determine when 3OA receives an inch or so of rain. We will monitor the projects to ensure that 1) stormwater is flowing directly into them, and 2) that in an inch or 1.5" of rain, all the rain is captured and doesn't run off. We also will monitor and record FOSC's outfall data just downstream from 3OA that flows into Sligo Creek to see whether any improvement in water quality measurements occurs. We will observe silting in the parking and driving areas to see whether there is reduction.

3OA will continue to take photos of stormwater during storm events. The organization will record attendance at information sessions we hold.

Experience
3OA has already set up and completed the following stormwater management projects: 1) Three rain gardens that capture roof water from the gutters of 17 homes; 2) a dry well that holds water from 3OA's concrete pool deck; and 3) installed a terraced area that retards erosion from a steep hillside. One of these projects was in partnership with RainScapes program; the others were completely on the initiative and volunteer activity of 3OA Board members and homeowners. They are all maintained via volunteers and 3OA funding for landscape upkeep.

The gutter water from six more roofs had to be diverted to the street and storm drains due to lack of suitable ground area. Part of the goal of the current grant application is to correct this situation by taking the second step of diverting water from the street into permeable pavers. (See attachment "criteria details")

3OA owners have varied backgrounds in many fields, such as government, non-profit, IT, computer design, science, marketing and economics, and they tend to applaud projects that demonstrate an environmental impact. Some of our residents are retired with extra time to assist in volunteer programs, and our young families like to participate in volunteer activities that include children.

Consultants
Since the installation of the first rain garden that captures gutter water from seven homes six years ago, 3OA has been considering other stormwater management projects. After completing four simpler projects (gutter water into rain gardens and a dry well for pool concrete deck), we started considering a more ambitious project of capturing the stormwater that flows over our parking lot and parking bays. In 2014, we started researching permeable pavers and/or trenches across our parking lot. We discussed objectives and design ideas with RainScapes staff, and we met with engineers, contractors, landscapers, and paver sales staff. In all cases, we only considered contractors who had been trained and approved in the RainScapes programs or met county professional criteria.

- We received bids from four landscape companies on trenching water into rain gardens and installing permeable pavers. (One of these companies updated its bid for this grant.)
- We met with and received a bid from PaveDrain (which was installed at Brookside Gardens). The installation bid is competitive with other landscaping paver bids. We were impressed with their experience with lower use travel lanes that still need to accommodate trucks and emergency vehicles.

- We had detailed conversations with three survey and landscape engineering companies, and received one engineering bid proposal. This 2016 proposal needs to be updated because we've changed our defined projects. We expect to have that (and other bids if needed) by the start of the grant in 2018.

Sustainability

Future Funding and Maintenance: The 3OA dues and Reserve Funds are robust. Past financial studies have shown that 3OA has enough money to fund new capital improvements. The landscape projects will be maintained under the 3OA current landscape contract as well as with volunteers. The permeable paver maintenance and repair will be covered by 3OA Reserve Funds. Weekly contracted leaf blowing will keep the permeable pavers relatively free of leaf litter. Paver vacuuming can be built into the 3OA annual operating budget.

Future Interest and Volunteer Help. Located one block from Sligo Creek and the recreational trail along Sligo Creek Parkway makes 3OA a visible community to pedestrians and cyclists as well as school children, dozens of whom cross through 3OA every day. Virtually every 3OA owner as well as those traversing the community are quickly exposed to FOSC programs and relevant 3OA environmental projects, as well as two county bio-retention areas, which are identified with signage, in the nearby Seven Oaks Park and playground. These projects are listed on the FOSC and 3OA websites and are discussed with 3OA owners at their biannual meetings. When 3OA and nearby SOECA owners built three "Little Free Libraries" (LFL) next to the playground, we held a potluck picnic with our neighbors. We asked for donations to help fund the LFL, and the response was very generous. 3OA could replicate that if our stormwater projects need additional volunteer help and/or some modest funding requirements.

FOSC is willing to help monitor the projects to ensure plant health, or other tweaks to stormwater projects, as well as reviewing and mitigating any problems with pervious pavers if they're used.

Regulatory issues

To the best of our knowledge, no part of our projects is required under any existing regulation (federal, state, or local permit, decree, and/or enforcement action), nor do our proposals exceed any regulatory requirements. Any contractor we hire will need to interact with WSSC and Pepco to ensure that projects do not interfere with rights-of-way or adversely impact their assets.

Technical information

Please include any additional technical information in this project narrative file (as opposed to attaching separate files).

Attachment: Site assessments (including perc tests)
Attachment: Soil survey map and FEMA flood plain map
Attachment: Criteria details and photos
Attachment: Contractor proposal